Operating Instructions

KRONE

Self-propelled High-Performance Mower-Conditioner

Big M 400

(from serial no.: 732 378)

Order no.: 150 000 123 00 US

29.04.2008

1 Table of Contents

1 Table of Contents 2
2 Foreword 13
3 Introduction 14
3.1 Validity 14
3.2 Identification Plate 14
3.3 Information Required for Questions and Orders 15
3.4 Intended Use 15
3.5 Machine overview 16
3.6 Technical data 17
3.6.1 Technical Data / Vehicle 17
3.6.2 Technical Data / Big M II CV Mower 18
3.6.3 Technical Data / Mower BIG M II CRI 18
4 Safety 19
4.1 Introduction 19
4.2 Identification of Hazard Warnings 19
4.2.1 Re-Ordering the Adhesive Safety and Information Labels 20
4.2.2 Affixing the Adhesive Safety and Information Labels 20
4.2.3 Contact 20
4.3 Position of the Adhesive Safety Stickers on the Machine 22
4.4 Position of the General Information Labels on the Machine 28
4.4.1 Identifying Symbols in the Operating Instructions 32
4.5 Identification of Hazard Warnings 32
5 Cabin 33
5.1 Ladder to driver's cabin 33
5.2 Opening the cabin door 34
5.3 Operators controls 35
5.3.1 Overview 35
5.4 Air comfort seat 36
5.4.1 Setting the left armrest 38
5.4.2 Right armrest 38
5.4.3 Storage compartment for first-aid kit/operating instructions 39
5.4.4 Passenger seat 40
5.4.5 Emergency exit 41
5.4.6 Diagnosis socket - motor 42
5.5 Steering column and foot pedals 43
5.5.1 Steering column adjustment 44
5.5.2 Horn 45
5.5.3 Indicator switch 45

5.5.4 Full beam ... 46
5.5.5 Headlamp flasher ... 46
5.5.6 Using the operating brake ... 47
5.6 Switch group roof panel ... 48
5.7 Lighting ... 49
5.7.1 Overview ... 49
5.7.2 Indicator, hazard warning flasher and brake light ... 50
5.7.2.1 Switching on the indicator ... 50
5.7.2.2 Brake light ... 50
5.7.2.3 Switching on the hazard warning flasher ... 50
5.7.3 Side light/dipped beam ... 51
5.7.3.1 Switching on the parking light ... 51
5.7.3.2 Switching on the dipped beam ... 52
5.7.4 Working floodlights ... 53
5.7.4.1 Working floodlights "down the side and at the right/left mowing units" ... 54
5.7.4.2 Working floodlights "Cab and rear" ... 54
5.7.4.3 “Bottom front” working floodlight ... 55
5.7.4.4 Working floodlight "rear" ... 55
5.7.5 Allround lights (optional) ... 56
5.7.6 Interior lighting ... 57
5.7.7 Spotlight ... 58
5.8 Outside mirrors ... 59
5.8.1 Left outside mirror ... 59
5.8.2 Right outside mirror and anti-collision mirror ... 60
5.9 Inside mirror ... 61
5.10 Sun blind ... 62
5.11 Windshield wipers ... 62
5.12 Washer system - windshield ... 63
5.13 Switch panel ... 64
5.14 Panel switches and pilot lamps ... 65
5.14.1 Actuating release switches ... 66
5.14.2 Release switch – road/field ... 67
5.14.3 Autopilot release switch / - optional ... 68
5.14.4 Release switch - holding brake ... 69
5.14.5 Release switch travelling gear ... 70
5.14.6 Axle separation key ... 71
5.14.7 Engine failure pilot lamp ... 72
5.14.8 Charge indicator lamp ... 72
5.14.9 Ignition lock ... 73
5.14.10 Cigarette lighter / 12-V socket ... 74

5.14.11 Diagnostics socket / USB connection ... 75
5.15 Multi-function lever ... 76
5.15.1 Multi-function lever (continued) ... 78
5.16 Klimatronik / heating ... 80
5.16.1 Control and display elements ... 80
5.16.2 Operation ... 82
5.16.3 Switching on the System ... 82
5.16.4 Setting the Desired Cab Temperature ... 82
5.16.5 Switch air conditioning On / Off ... 83
5.16.6 Switch REHEAT mode On / Off ... 84
5.16.7 Manual setting of evaporator fan speed ... 85
5.16.8 Switching the Temperature Display to ° Fahrenheit ... 86
5.16.9 Showing Faults in the Display ... 87
5.17 Adjustable air jets ... 89
5.18 Radio ... 90
6 Info centre "EasyTouch" ... 92
6.1.1 Overview ... 92
6.2 Information section ... 94
6.2.1 Status line (I) ... 95
6.2.2 Motor data (II) information section ... 96
6.2.3 Information section of the travelling gear data (III) ... 97
6.2.4 Information section of settings (IV and V) ... 98
6.2.5 Drive data information section (VI) ... 98
6.3 Quick Access Keys in the Basic Screen ... 99
6.3.1 Quick access "Reverse ventilation" ... 99
6.3.2 Quick access "Hydraulically adjustable cutting height" (optional) ... 100
6.3.3 Quick access "Hydraulically adjustable lateral spring compensation" (ground pressure) (optional) 102
6.3.4 Quick access "Customer Data Counter" ... 104
6.3.5 Changing a customer record (1) or creating a new one ... 105
6.3.5.1 Switching the counter on or off ... 106
6.3.5.2 Deleting the customer counter ... 107
6.3.5.3 Switching to General Counters (Machine Data Counters) ... 107
6.3.6 Quick access "Hydraulic axle suspension" ... 108
6.3.6.1 From the "Road travel" basic screen ... 108
6.3.6.2 From the "Field mode" basic screen ... 109
6.3.7 Quick access "Machine settings" ... 110
6.4 Menu Level ... 111
6.4.1 Short overview ... 111
6.4.2 Bringing up a Menu Level ... 112

6.5 Menu 1-1 "Parameters" ... 114
6.5.1 Entering parameters ... 115
6.6 Menu 1-2 "Machine setting" ... 116
6.6.1 Menu 1-3 "Units" ... 121
6.6.2 Menu 1-4 "Language" ... 122
6.6.3 Menu 1-5 "Display" ... 123
6.6.4 menu 1-5-1 "Contrast" ... 124
6.6.5 Menu 1-5-2 Beeper ... 125
6.6.6 Beeper limited by time ... 126
6.6.7 Menu 1-6 "Date/time" ... 127
6.7 Main Menu 2 "Counters" ... 128
6.7.1 Machine Data Counter ... 128
6.7.1.1 Deleting the Machine Data Counters (Sets 1 to 3) ... 129
6.7.2 Switching to Customer DataCounters ... 129
6.8 Main Menu 3 "Maintenance" ... 130
6.8.1 Menu 3-1 "Calibration of cutting height" ... 131
6.8.2 Menu 3-4 „Manual mode“ ... 134
6.8.3 Status display of general sensors (2) ... 136
6.9 Main Menu 4 Service ... 137
6.9.1 Menu 4-1 "Diagnostics" ... 138
6.9.2 Display of Release Conditions Not Met for Diagnostics ... 139
6.9.3 Display of possible faults for diagnostics ... 140
6.9.4 Menu 4-1-1 "Diagnostics of axle suspension" ... 141
6.9.5 Menu 4-1-3 "Diagnostics of spring compensation" ... 144
6.9.6 Menu 4-1-4 "Diagnostics of cutting height" ... 149
6.9.7 Menu 4-1-5 "Diagnostics of hydraulic auger hood" ... 157
6.9.8 Menu 4-1-6 "Sideshift diagnostics" ... 162
6.9.9 Menu 4-1-10 "Diagnostics Work" ... 167
6.9.10 Menu 4-1-11 "CAN bus" ... 178
6.9.11 Menu 4-1-12 "Travelling gear" ... 179
6.9.12 Menu 4-1-13 "Electronics" ... 188
6.9.13 Menu 4-1-14 "Diesel engine" ... 190
6.9.14 Menu 4-1-15 "Joystick" ... 192
6.9.15 Menu 4-1-16 "Control unit console" ... 194
6.9.16 Menu 4-1-17 "Display" ... 196
6.10 Menu 4-2 "Error list" ... 197
6.11 Menu 4-3 "Service level" ... 201
6.12 Menu 4-4 "Information" ... 202
6.12.1 Menu 4-4-1 "Joystick" ... 203
6.12.2 Menu 4-4-3 "Machine" ... 205

6.13 Menu 5 "Basic Screen" ... 206
6.13.1 Error message ... 207
6.13.2 Information message ... 208
7 Commissioning ... 209
7.1 Fitting the guard cloths ... 209
7.2 Folding Down Lateral Mowing Units ... 209
7.2.1 Description of Installation ... 211
7.2.2 Guard cloths (CRI with upper roller drive) ... 212
7.2.3 Adjusting the Warning Panel ... 213
7.3 Installation of Cutter Blades ... 213
8 Start-up ... 214
8.1 Check before Start-up ... 214
8.2 Daily checks ... 214
8.2.1 On the Basic Machine ... 215
8.2.2 On the mowing units ... 215
9 Driving and Transport ... 216
9.1 Transport / Road Travel ... 216
9.2 Preparation for transport/road travel ... 217
9.2.1 Folding Up the Guards ... 217
9.2.2 Move the front mowing unit to central position (with sideshift option) ... 218
9.2.3 Check interlock ... 218
9.2.4 Disable the shut-off valve on the front outrigger. ... 219
9.2.5 Release switch – road/field ... 219
9.2.6 Release switch travelling gear ... 220
9.3 Starting the engine ... 221
9.3.1 Killing the engine ... 223
9.3.2 Starting with an Auxiliary Battery ... 223
9.4 Starting to Drive ... 223
9.4.1 Setting the acceleration behaviour ... 224
9.4.2 General on Driving ... 224
9.4.3 Preventing an overheating of the hydrostatic system ... 225
9.4.4 Driving forwards ... 226
9.4.5 Reversing ... 227
9.5 Cruise control ... 228
9.5.1 Storing the speed for the cruise control mode ... 228
9.5.2 Activating cruise control ... 229
9.5.3 Deactivating cruise control ... 229
9.6 Stopping ... 230
9.6.1 Stopping with the multi-function lever ... 230
9.6.2 Stopping with Foot Brakes ... 231

9.7 Parking brake ... 232
9.8 Switch off the engine ... 233
9.9 Switch off the machine ... 233
9.10 Towing ... 234
9.10.1 Releasing the holding brake manually ... 234
10 Operation – Mowing Units ... 235
10.1 Intended Use ... 235
10.2 Operation of Mowing Units ... 236
10.3 Folding Down Lateral Mowing Units ... 237
10.3.1 Lowering the Lateral Mowing Units from Transport Position to Headland Position ... 238
10.3.2 Lowering the Lateral Mowing Units from Headland Position to Working Position ... 239
10.3.3 Lower the front mowing unit into working position ... 240
10.4 Headland Position ... 241
10.5 Mowing Unit Drive ... 242
10.5.1 Switching the Mowing Unit Drives On and Off ... 243
10.5.2 Switching the Left Mowing Unit Drive On/Off ... 243
10.5.3 Switching the Right Mowing Unit Drive On/Off ... 244
10.5.4 Switching the Front Mowing Unit Drive On/Off ... 245
10.5.5 Switching All Mowing Unit Drives On/Off ... 246
10.6 Folding Up Lateral Mowing Units ... 247
10.6.1 Checking the Lock on the Lateral Mowing Units ... 248
10.6.2 Lifting the Lateral Mowing Units from working Position to Headland Position ... 248
10.6.3 Folding the Lateral Mowing Units from Headland Position to Transport Position ... 249
10.6.4 Check interlock ... 250
10.7 Raising the Front Mowing Unit to Transport Position ... 250
10.8 Mowing ... 251
10.8.1 Moving the Guards into Working Position ... 253
10.8.2 Semi-automatic mode ... 254
10.8.3 Mowing with Individual Mowing Units ... 254
10.8.4 Quick stop ... 255
10.8.5 Fast direction change (fast reversing) ... 255
10.8.6 Switching Axle Separation On and Off ... 256
11 Adjusting the mowing units ... 257
11.1 Special Safety Instructions ... 257
11.2 Adjusting the cutting height ... 258
11.2.1 Front mowing unit ... 258
11.2.2 Adjusting the Lifting Height ... 259
11.2.2.1 Front mowing unit ... 259
11.2.3 Adjusting the cutting height ... 260
11.2.3.1 Lateral Mowing Unit ... 260

11.3 Adjusting the Compensation Springs ... 262
11.3.1 Front mowing unit ... 263
11.3.2 Lateral Mowing Unit ... 264
11.4 Adjusting the Tedder Speed ... 265
11.4.1 Lateral Mowing Unit ... 265
11.4.2 Front mowing unit (CV) ... 266
11.5 Adjusting the conditioner plate ... 267
11.6 Adjusting the roller conditioner (optional extra/Big M CRI) ... 268
11.6.1 Adjusting the roller distance ... 268
11.6.2 Adjusting the roller pressure ... 269
11.7 Setting of the Scraper on the Cross Conveyor (Optional) ... 270
11.8 Adjusting the swath width ... 271
11.8.1 Front mowing unit ... 271
11.8.2 Lateral Mowing Unit ... 272
11.9 Adjusting the track control arm on the lateral mowing units ... 273
11.10 Deflector Plates ... 273
11.10.1 Front mowing unit ... 273
11.11 Deactivating the axle suspension ... 274

12 Special Equipment – Mowing Units ... 275
12.1 Converting the Tedder Deflector Plate to an Auger-Type Cross Conveyor ... 275
12.1.1 Removing the tedder deflector plate ... 276
12.1.2 Releasing the tension jacks ... 276
12.1.3 Removing the tedder deflector plate ... 277
12.1.4 Checking the Tines ... 278
12.1.5 Removing the guard ... 278
12.1.6 Installing the auger-type cross conveyor ... 279
12.1.7 Locking the tension jacks ... 280
12.2 Tensioning the V-belts ... 280
12.2.1 Installing the guard ... 281
12.2.2 Connecting the speed sensor ... 281
12.2.3 Removing the floor plates ... 282
12.2.4 Relaying the Lubrication Lines ... 284
12.2.5 Installation Instructions – Bulge Bags for Big M 400 with BSS ... 285
12.2.6 Switching on the auger monitoring mode ... 286
12.2.7 Converting an Auger-Type Cross Conveyor to a "Tedder deflector plate unit" ... 288
12.3 Additional Equipment – Mulching Device ... 289
12.4 Removing Mowing Units ... 290
12.4.1 Front mowing unit ... 290
12.4.2 Removing of the compensation springs ... 291
12.4.3 To remove the PTO shaft: ... 292

12.4.4 Removing the Weiste Triangle ... 294
12.4.5 Attaching the Front Mowing Unit ... 296
12.4.6 Removing the Side Mowing Unit ... 297
12.4.7 Attaching the Lateral Mowing Unit ... 304
12.4.8 The remainder of the installation is in reverse order to the removal procedure. ... 306

13 Maintenance - Engine ... 307
13.1 Maintenance Table – Engine ... 308
13.2 Contamination in the engine compartment ... 309
13.3 Cleaning the Engine Compartment with Compressed Air ... 309
13.4 Engine oil level ... 310
13.4.1 Engine oil and filter replacement ... 310
13.5 Fuel filter/water separator ... 311
13.5.1 Replacing the fuel filter ... 311
13.5.2 Empty the water separator ... 311
13.6 Replacing the fuel filter element ... 312
13.7 Fuel ... 313
13.8 Tanks ... 314
13.9 Venting the fuel system ... 315
13.10 Engine coolant ... 315
13.11 Engine coolant - checks and controls ... 316
13.12 Air filter ... 317
13.12.1 Safety cartridge ... 317

14 Maintenance – Mowing Units ... 318
14.1 Special Safety Instructions ... 318
14.1.1 Test run ... 319
14.2 Spare Parts ... 319
14.3 Maintenance Table – Mowing Units ... 320
14.4 Tool box ... 321
14.5 Torques ... 321
14.5.1 Deviating Torque ... 322
14.6 Filling Quantities and Lubrication Designations for Gearboxes ... 322
14.6.1 Oil Level Check and Oil Change Intervals (Gearboxes) ... 322
14.7 Main gearbox ... 323
14.7.1 Lateral Mowing Unit ... 323
14.8 Angular gearbox ... 324
14.8.1 Front Mowing Unit (CV+CRI) ... 324
14.9 Input gearbox ... 325
14.9.1 Front Mowing Unit (CV+CRI) ... 325
14.10 Speed gearbox ... 326
14.10.1 Front mowing unit (CV) ... 326

14.11 Angular gearbox ... 327
14.11.1 CRI ... 327
14.12 Gearbox for Top Roller Drive (optional) ... 328
14.13 Oil level check and oil change on the cutter bar ... 329
14.13.1 Front mowing unit ... 329
14.13.2 Aligning the Cutter Bar ... 329
14.13.3 Checking the oil level ... 330
14.13.4 Oil change ... 331
14.14 Oil level check and oil change on the cutter bar ... 332
14.14.1 Lateral Mowing Unit ... 332
14.14.2 Checking the oil level ... 333
14.14.3 Oil change ... 334
14.15 Checking the Cutter Blades and Blade Holder ... 335
14.15.1 Cutter Blades ... 335
14.15.2 Blade screw connection ... 336
14.15.3 Blade Quick-Fit Device ... 337
14.15.4 Periodical Inspection of the Leaf Springs ... 338
14.15.5 Periodical Inspection of the Cutting Discs / Blade Drums ... 339
14.15.6 Abrasion Limit ... 340
14.16 Blade Changing on Cutting Discs ... 341
14.16.1 Blade Screw Connection ... 342
14.16.2 Blade Quick-Fit Device ... 343
14.17 Replacing the linings ... 344
14.18 Rotary hub with shear protection ... 345
14.18.1 After Shearing Off ... 347
15 Maintenance – Basic Machine ... 349
15.1 Brakes ... 349
15.2 Hydraulic system ... 350
15.3 Maintenance - hydraulic system ... 353
15.3.1 System Description Operating and Brake Hydraulics ... 353
15.3.2 Pumps ... 353
15.3.3 Main block ... 354
15.3.4 Over-pressure valves ... 355
15.3.5 Adjustable Throttles ... 355
15.4 Hydraulic oil ... 356
15.4.1 List of Mineral Oils for the Hydraulic System ... 356
15.4.1.1 HEPG VG 46 ... 356
15.5 Hydraulic oil level ... 358
15.6 Replacing the hydraulic oil filter ... 359
15.7 Transfer gearbox ... 360

15.8 Air intake and distribution ... 361
15.8.1 Fresh air fan ... 362
15.8.2 Circulation filter ... 363
15.9 Windscreen washer system ... 364
15.10 Maintenance - air conditioning system and heating ... 365
15.11 Special Safety Instructions ... 365
15.11.1 Air conditioning components ... 365
15.11.2 Refrigerant data sheet R 134a (excerpt) ... 366
15.11.3 Technical data ... 366
15.11.3.1 Refrigerant ... 367
15.11.4 Manometric switch ... 367
15.11.5 Collector/drier ... 368
15.11.6 Checking refrigerant condition and level ... 369
15.12 Checking the capacitor ... 370
15.13 Belt drives ... 371
15.13.1 Fan wheel drive ... 372
15.13.2 Outrigger arms ... 373
15.13.3 Drive of mowing unit ... 375
15.14 Tyres ... 376
15.14.1 Checking and maintaining tyres ... 377
15.14.2 Wheel mounting ... 378
15.14.3 Retightening the Attachment Bolts on the Outrigger ... 378
16 Maintenance – lubrication chart ... 379
16.1 Lubricating the PTO shaft ... 379
16.2 Lubricating the double joints on the main gearbox ... 379
16.3 Lubrication Chart ... 380
17 Maintenance – electrical system ... 381
17.1 Electrical equipment - technical data ... 381
17.2 Battery ... 382
17.2.1 Main battery switch ... 383
17.2.2 Charging Batteries ... 384
17.2.3 Quick charge ... 384
17.2.4 Cleaning the battery ... 384
17.2.5 Check battery ... 385
17.2.6 Check acid level ... 385
17.2.7 Measuring Acid Density ... 386
17.3 Fitting the batteries and connecting the poles correctly ... 387
17.4 Three-phase generator ... 388
17.5 Starter ... 389
17.6 Control units and fuses ... 390

17.6.1 MR2 engine control ... 391
17.6.2 Cab relay PCB ... 391
17.6.2.1 Console Circuit Board ... 392
17.7 Console Circuit Board ... 393
17.7.1 Krone Machine Controller circuit board (KMC1) ... 394
18 Maintenance – Central Lubrication ... 395
18.1 Lubricant fill ... 395
18.2 Fill coupling (fluid grease) ... 395
18.3 Lubricant ... 397
18.3.1 Grease types, NLGIClass 2 ... 398
18.4 Checking the fill level ... 399
18.5 Changing the times of the lubricating interval ... 400
18.6 Troubleshooting ... 401
19 Placing in Storage ... 402
19.1 At the End of the Harvest Season ... 402
19.2 Engine area ... 402
19.3 Before the Start of the New Season ... 403
19.4 Friction clutch -ByPy ... 404
19.4.1 Venting the Friction Clutch on the PTO Shaft ... 404

2 Foreword

Dear Customer

On buying the Self-Propelled High-Performance Mower-Conditioner Big M 400 you have selected a quality product from KRONE.

We are grateful for the confidence you have invested in us in buying this machine.

It is important to read the operating instructions very carefully before you start operating the machine so that the Self-Propelled High-Performance Mower-Conditioner Big M 400 may be used to its maximum capacity.

The contents of this manual are laid out in such a way that you should be able to perform any task by following the instructions step by step. It contains extensive notes and information about maintenance, how to use the machine safely, secure working methods, special precautionary measures and available accessories. It is essential, important and useful for the operational safety, reliability and durability of the Self-Propelled High-Performance Mower-Conditioner Big M 400, that these notes and information are adhered to.

Note

Throughout the remainder of these operating instructions, the "Self-Propelled High Performance Mowing Conditioner "Big M 400" will also be referred to as the "machine / vehicle".

Please note:

The operating instructions are part of your machine.

Only operate this machine after you have been trained to do so and according to these instructions.

It is essential to observe the safety instructions!

It is also necessary to observe the relevant accident prevention regulations and other generally recognised regulations concerning safety, occupational health and road traffic.

All information, illustrations and technical data in these operating instructions correspond to the latest state at the time of publication.

We reserve the right to make design changes at any time and without notification of reasons. Should you for any reason not be able to use these operating instructions either wholly or partially, you can receive a replacement set of operating instructions for your machine by quoting the number supplied overleaf.

We hope that you will be satisfied with your KRONE machine.

Maschinenfabrik Bernard Krone GmbH

Spelle

3 Introduction

These operating instructions contain fundamental instructions. These must be observed in operation and maintenance. For this reason, these operating instructions must be read by operating personnel before commissioning and use, and must be available for easy reference.

Follow both the general safety instructions contained in the section on safety and the specific safety instructions contained in the other sections.

3.1 Validity

The Operating Instructions apply to all Self-Propelled High Performance Mowing Conditioners Big M 400.

3.2 Identification Plate

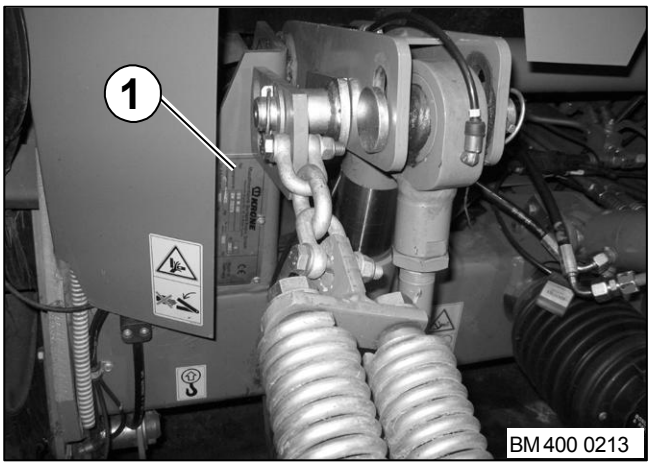


Fig. 1:

The machine data are located on a nameplate (1). It is located on the lower right side of the machine on the front of the frame.

3.3 Information Required for Questions and Orders

Type	
Year of manufacture	
Vehicle ID number	

Note

The entire identification plate represents a legal document and should not be altered or rendered illegible!

When asking questions concerning the machine or ordering spare parts, be sure to provide type designation, vehicle ID number and the year of manufacture : To ensure that these data are always available, we recommend that you enter them in the fields above.

Note

Authentic KRONE spare parts and accessories authorised by the manufacturer help to ensure safety. The use of spare parts, accessories and other devices which are not manufactured, tested or approved by KRONE will result in the revoking of the liability for damages resulting thereof.

3.4 Intended Use

The Big M II self-propelled high-performance mower-conditioner is a carrier vehicle for three disc mowing units with a mowing conditioner. It is used to cut agricultural stalk and leaf crop. Three individual mowing units allow the working width to be adapted. Integrated mower-conditioners accelerate the drying process of the mowed crop.

The self-propelled high performance mowing conditioner is intended exclusively for the conventional use in agricultural or similar work (intended use).

Any use of the machine for other purposes is deemed not to be in accordance with intended use. The manufacturer shall not be liable for any resulting damage; the user alone shall bear the risk.

Operation in accordance with intended use also includes observing the operating, maintenance and service instructions specified by the manufacturer.

Unauthorised modifications to the machine may affect the properties of the machine or disrupt proper operation. For this reason, unauthorised modifications shall exclude any liability of the manufacturer for consequential damage.

3.5 Machine overview

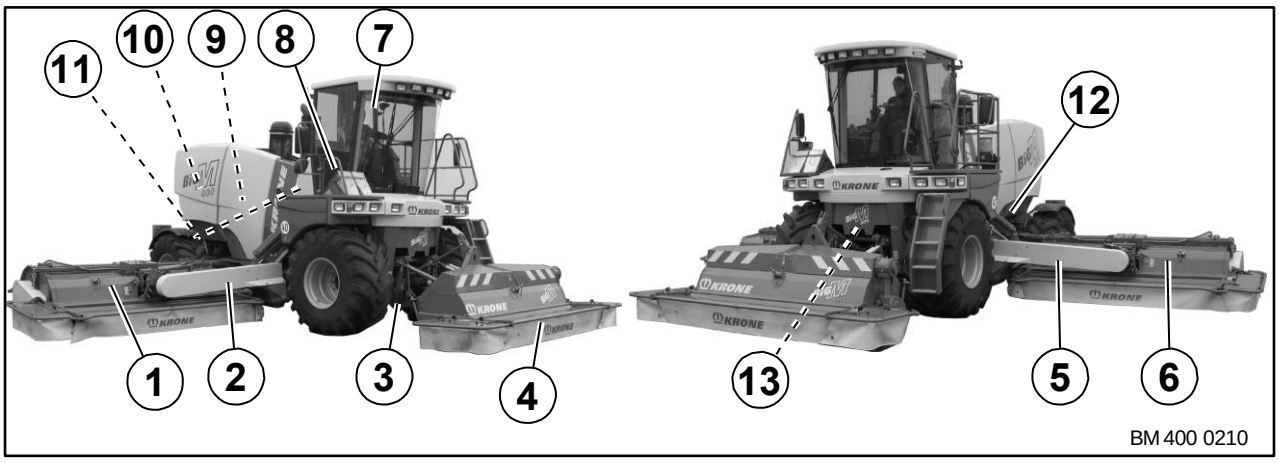


Fig. 2:

1 Lateral mowing unit right
2 Right outrigger
3 Lifting gear
4 Front mowing unit
5 Lateral mowing unit left
6 Outrigger arm left
7 Cabin
8 Operating panel
9 Engine
10 Combination radiator
11 Work hydraulics valves
12 Main battery switch
13 Shut-off valve for front outrigger

3.6 Technical data

All information, illustrations and technical data in these operating instructions correspond to the latest state at the time of publication. We reserve the right to make design changes at any time and without notification of reasons.

3.6.1 Technical Data / Vehicle

Power	{KW/PS}	260/354
Transport width/length/height	{mm}	3000 / 8180 / 4000
Weight	{approx. kg.}	14000
Weight distribution		about 9000 front / 5600 rear
Running gear		4 wheels Direct drive provided by radial piston engines
Steering		Rear axle steering
Tyres/air pressure		front 750/65 R26 – 1.8 bar rear 580/70 R26 - 1.2 bar
Tightening torque for wheel nuts	Nm	630
Hydrostatic travelling gear	Level I Level II	0 to 19 km/h continuous (all-wheel drive) 0 to 40 km/h continuous (all-wheel drive) Connectable axle separation in level 1
Drive pump		max. delivery capacity 425 l/min; max. pressure 430 bar

Filling Quantities	Filling quantities {l}	Filtered oils Brand name	Bio-degradable lubricants Brand name
Diesel tank	approx. 700	see the "Engine" section	
Engine oil	approx. 25.4	see the "Engine" section	
Hydraulic oil	approx. 80		HLP 46 HE 46 *)
Coolant	approx. -	see the "Engine" section	
Transfer gearbox	approx. 6.0	gearbox oil synthetic DIN 51502 -PGLP ISO VG 220	

***) Caution: Do not mix with other oils.**

Consult customer service before using other oils.

3.6.2 Technical Data / Big M II CV Mower

Working width total/individual {mm}	9720/3140 front/3520 side
Transport width {mm}	3000 mower
Number of cutting discs	4/side mowing units - 5 front mowing units
Number of blade drums	4/side mowing units - 2 front mowing units
Conditioner system	V-shaped prong
Speed of the conditioner [rpm]	**700 / 1000**

3.6.3 Technical Data / Mower BIG M II CRI

Working width total/individual {mm}	9000 / 3140
Transport width {mm}	3000 mower
Number of cutting discs	5 / mower
Number of blade drums	2 / mower
Conditioner system	rollers
Speed of the conditioner [rpm]	760

4 Safety

4.1 Introduction

The Big M 400 Self-Propelled High-Performance Mower-Conditioner is equipped with all the necessary safety devices (protective devices). However, it is not possible to eliminate all potential hazards on this machine as this would impair its full functional capability. Hazard warnings are attached to the machine in the relevant areas to warn against any dangers. The safety instructions are provided in the form of so-called warning pictograms. Important information on the position of these safety signs and what they mean is given below!

Danger!

Danger zone of the machine
Effect: Danger to life or serious injuries.

- **Immediately replace damaged or illegible adhesive labels.**
- **Following repair work, always attach appropriate adhesive safety stickers to all the replaced, modified or repaired components.**
- **Never clean areas carrying an adhesive safety label using a high-pressure cleaner.**
- **Familiarise yourself with the statement of the warning pictograms. The adjacent text and the selected location on the machine provide information on the special danger spots on the machine.**

4.2 Identification of Hazard Warnings

Danger!

Danger!

Type and source of the hazard
Effect: Danger to life or serious injuries.

- **Measures for hazard prevention**

Warning sign

Warning!

Type and source of the hazard
Effect: Danger to life or serious injuries.

- **Measures for hazard prevention**

Caution!

Caution!

Type and source of the hazard
Effect: Danger to life or serious injuries.

- **Measures for hazard prevention**

4.2.1 Re-Ordering the Adhesive Safety and Information Labels

Note

Every adhesive safety and information label is assigned an order number and can be ordered directly from the manufacturer or from an authorized dealer (see Section "Contact").

4.2.2 Affixing the Adhesive Safety and Information Labels

Note

Affixing an adhesive label
Effect: Adhesion of the label

- **The surface for affixing the adhesive label must be clean and free of dirt, oil and grease.**

4.2.3 Contact

Maschinenfabrik Bernard Krone GmbH

Heinrich-Krone-Strasse 10

D-48480 Spelle (Germany)

Telephone: + 049 (0) 59 77/935-0 (Head Office)

Fax.: + 049 (0) 59 77/935-339 (Head Office)

Fax.: + 049 (0) 59 77/935-239 (Spare parts - domestic)

Fax.: + 049 (0) 59 77/935-359 (Spare parts - export)

Email: info.ldm@krone.de

4.3 Position of the Adhesive Safety Stickers on the Machine

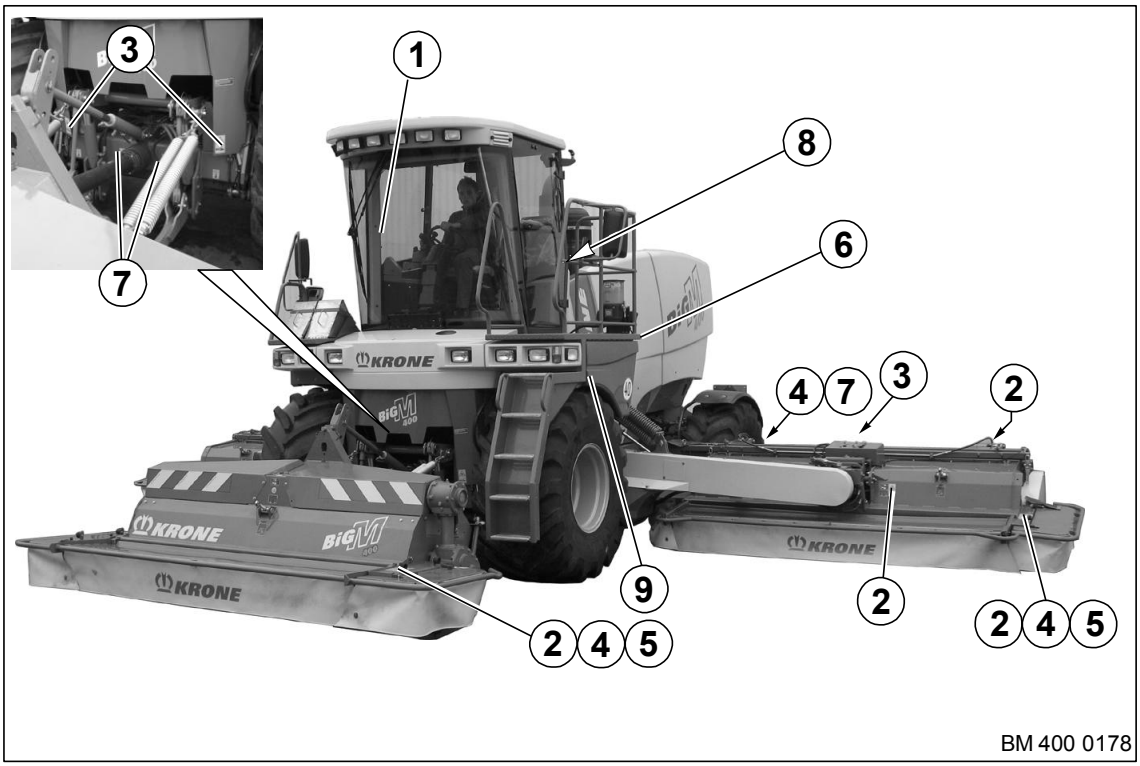


Fig. 3:

Left-hand side of the machine

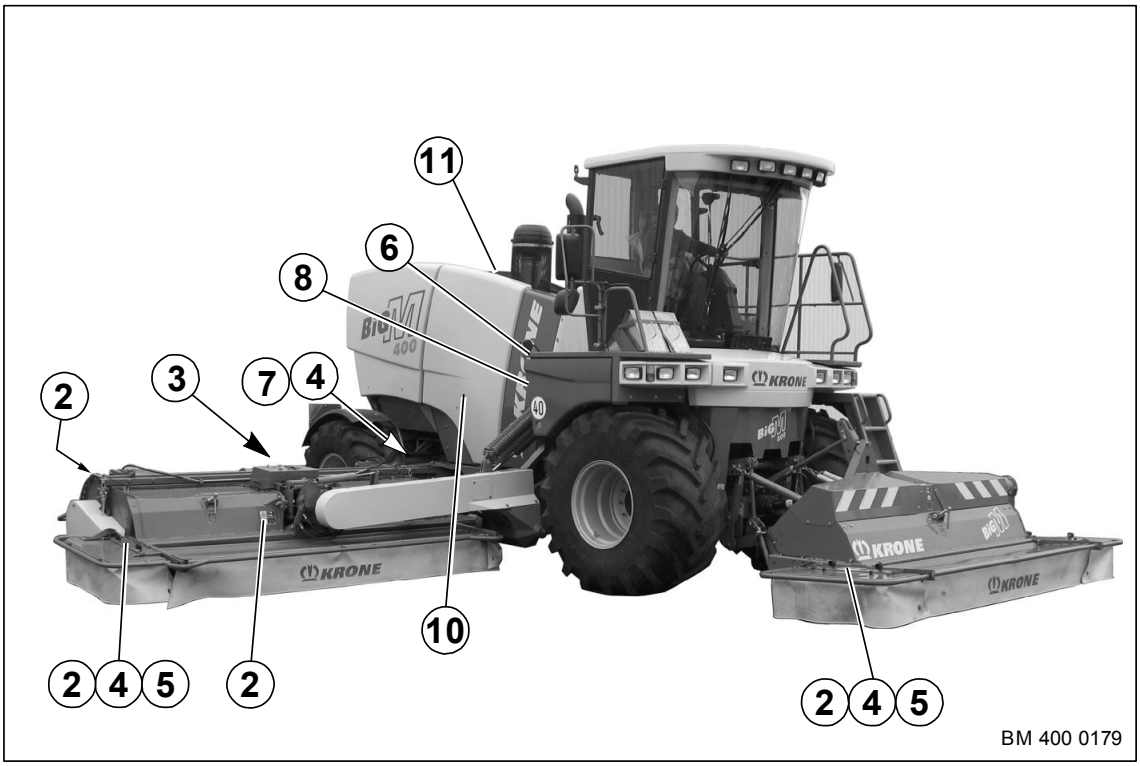
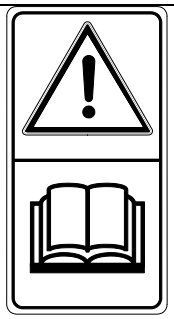


Fig. 4:

Right-hand side of the machine

1)
Before starting the machine read and observe the operating instructions and safety instructions.

Order No. 939 471-1 (1x)

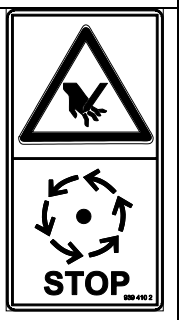


2)
When the engine is in operation, keep your distance.
Order No. 942,197-1 (8x)

3)
While parts are moving, never reach into areas where there is a risk of being crushed.

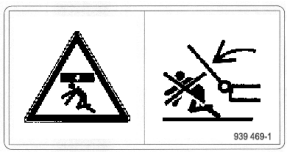
Order no. 942,196-1 (4x)

4)
Do not touch any moving parts of the machine.
Wait until they have come to a complete stop.
Order no.



5)
Move guard into position
Order no. 939,572-0 (4x)

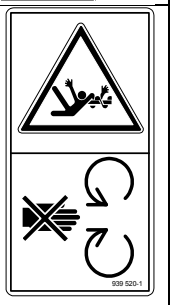
6)



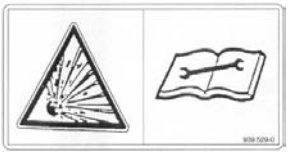
Do not stand within the swivel range!
Order No. 939,469-1 (2x)

7)
Danger due to rotating shaft.

Order No. 939,520-1 (2x)
(with auger - option (4x))

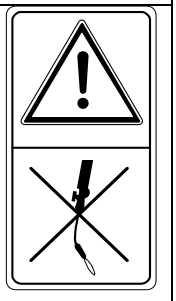


8)



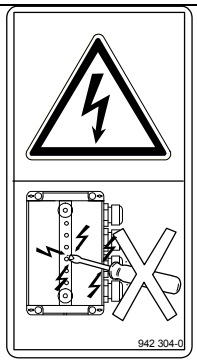
The accumulator is subject to gas and oil pressure. Disassemble and repair in strict accordance with the instructions in the technical handbook.
Order No. 939,529-0 (2x)

9)
When making repairs (welding work), always
Switch off the engine.
Disconnect the main battery switch and remove the two cable plugs from the PLD control unit on the engine.



10)
Caution: No short-circuit produce!

Order No. 942,304-0 (1x)



50

Grund: gelb
Schrift: schwarz
Kreuz: rot

50

Grund: gelb
Schrift: schwarz
Kreuz: rot

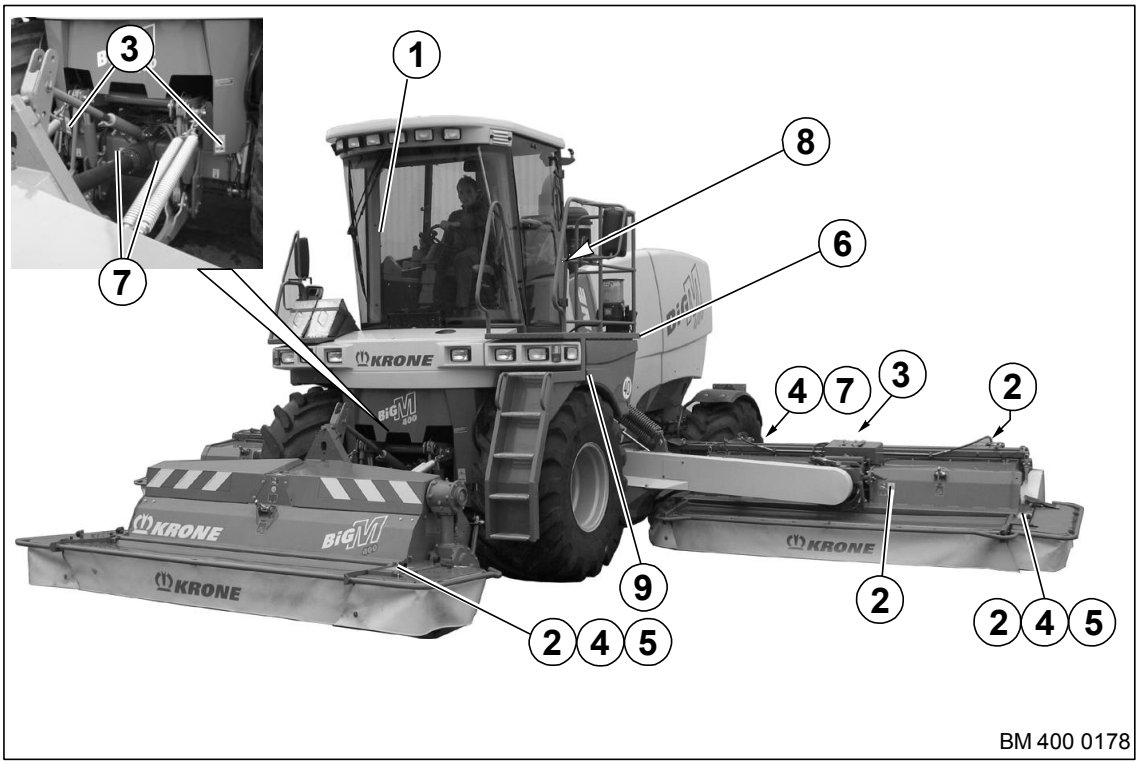


Fig. 5:

Left-hand side of the machine

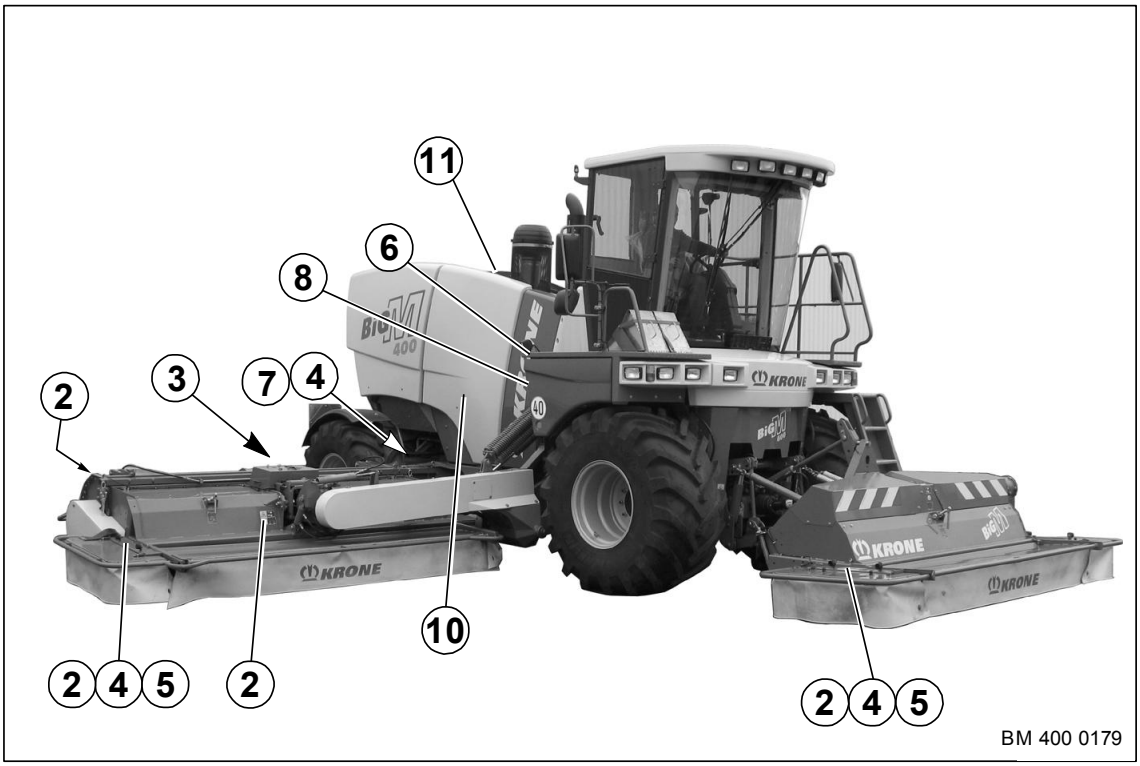


Fig. 6:

Right-hand side of the machine

11)

Danger of falling!
Do not walk on ladder step.

Order No. 27 002 715 0 (1x)

12)

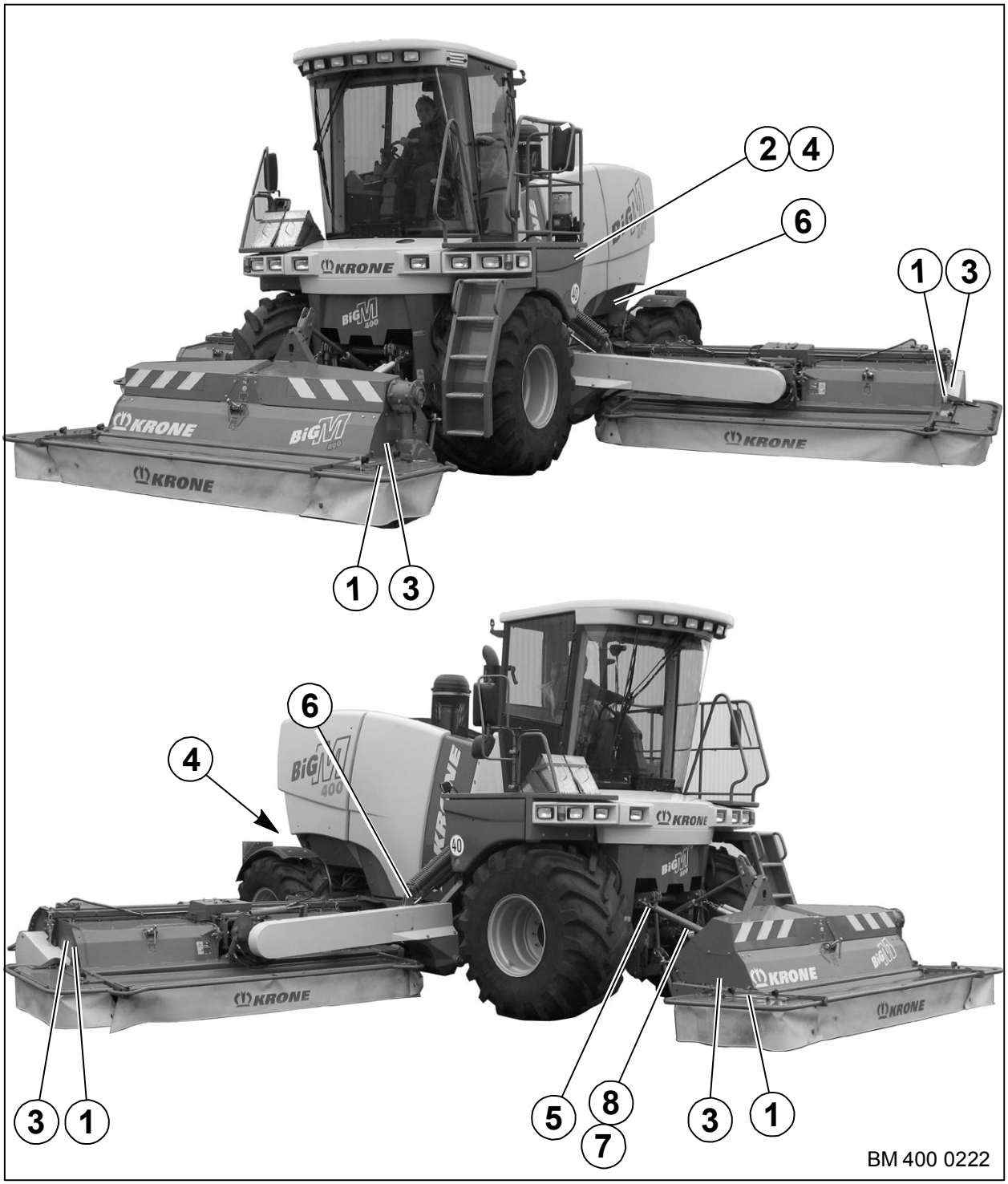


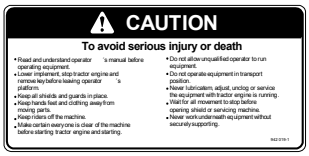
Fig. 7:

1)

DANGER
Thrown objects or blade contact can cause serious injury or death.
* Stay clear of machine while in operation.
* Keep discharge chute and shields in place.
* Replace worn or damaged protective skirting.

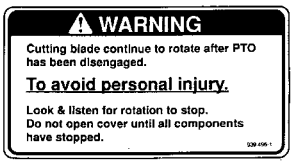
942 020 2 (4) Required

2)


CAUTION
To avoid serious injury or death
• Read and understand operator 's manual before operating equipment.
• Lower implement, stop tractor engine and remove key before leaving operator 's platform.
• Keep all shields and guards in place.
• Keep hands feet and clothing away from moving parts.
• Keep riders off the machine.
• Make certain everyone is clear of the machine before starting tractor engine and starting.
• Do not allow unqualified operator to run equipment.
• Do not operate equipment in transport position.
• Never lubricate, adjust, unclog or service the equipment with tractor engine is running.
• Wait for all movement to stop before opening shield or servicing machine.
• Never work underneath equipment without securely supporting.

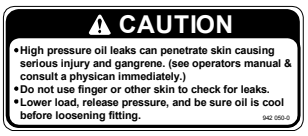
942,019 1 (1) Required

3)


WARNING
Cutting blade continue to rotate after PTO has been disengaged.
To avoid personal injury.
Look & listen for rotation to stop.
Do not open cover until all components have stopped.

939,495 1 (4) Required

4)


CAUTION
• High pressure oil leaks can penetrate skin causing serious injury and gangrene. (see operators manual & consult a physican immediately.)
• Do not use finger or other skin to check for leaks.
• Lower load, release pressure, and be sure oil is cool before loosening fitting.
942 050-0

942,050 0 (3) Required

5)

942,032 2 (1) Required

6)

WARNING
To avoid possible injury.
Do not stand between tractor and mower, or near mower while changing from transport position or to transport position.
942 018-1

942,018 1 (2) Required

7)

949,229 0 (1) Required

8)

DANGER
ROTATING DRIVELINE
CONTACT CAN CAUSE DEATH
KEEP AWAY.
DO NOT OPERATE WITHOUT-
• ALL DRIVELINE, TRACTOR AND EQUIPMENT SHIELDS IN PLACE
• DRIVELINE SECURELY ATTACHED AT BOTH ENDS
• DRIVELINE SHIELDS THAT TURN FREELY ON DRIVELINE

949,228 0 (1) Required

4.4 Position of the General Information Labels on the Machine

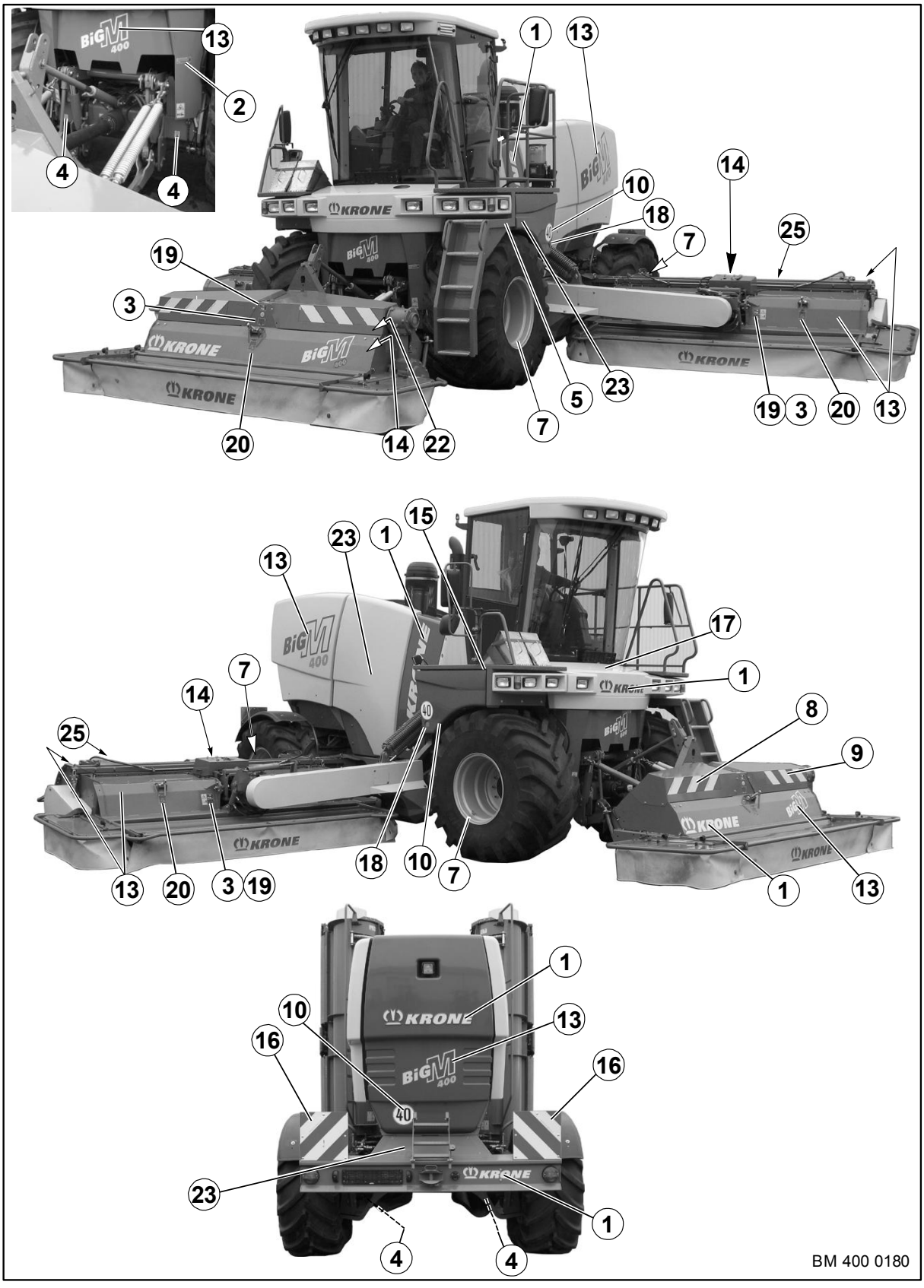


Fig. 8:

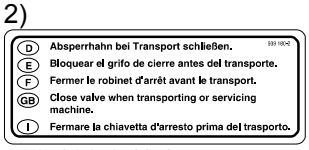
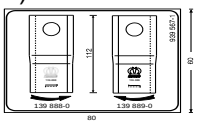
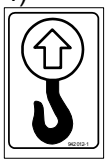
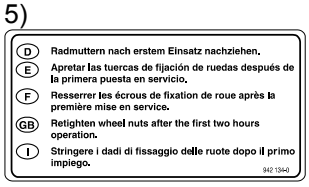
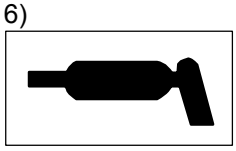
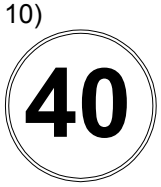
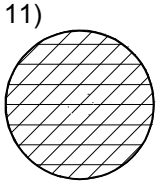
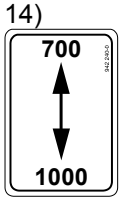
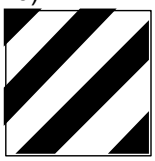
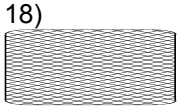
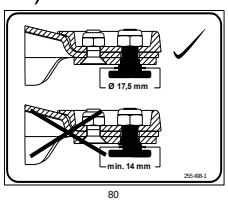
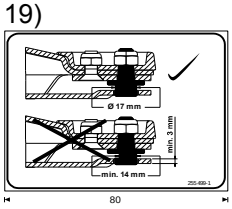
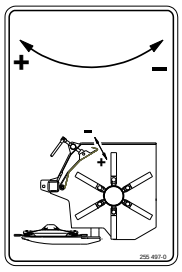
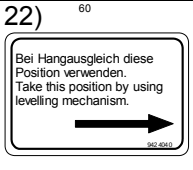
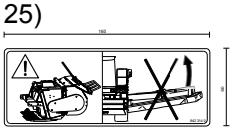
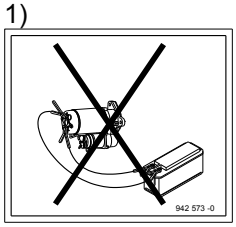
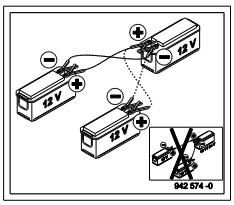
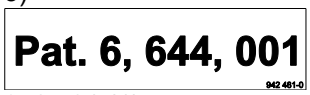
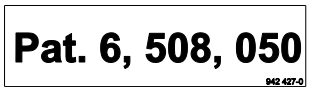
1) 27,002,3920 (2x) lg.=16000 mm beige 942,301 0 (1x) lg.= 775 mm beige	2)  939,180 2 (1x)	3)  939 567 1 (x)	4)  942,012 1 (4x)
5)  942,134 0 (1x)	6)  939 451 1	7) **1.2 bar** 942 3780 (4x) 1,2 bar 942,3770 (2x) 1.6 bar	8) 942,625 0 (1x) 942 626 0 (1)
10)  939 145 1 (40 km/h) (3x) 939,218 1 (25 km/h) (3x)	11)  924 634 0 (6x) side light	12) 27 002 393 0 (2x) lg.=1250 mm (green) 27 002 394 0 (4x) lg.=550 mm (beige) 27 002 395 0 (3x) lg.=440 mm (beige)	13) 27 002 396 0 (2x) H= 140 anthracite 27 002 397 0 (1x) H= 68 anthracite 27 002 398 0 (3x) H= 50 anthracite 27 024 920 0 (3x) H= 68 beige
14)  942,2400 (3x)	15) 942,287 0 (1x)	16)  924,5690 (2x)	17) 233,154 0 (1x)
18)  942 729 0	19)  255,4981 (3x) with blade screw connection	19)  255,4991 (3x)	20)  255,4970 (3x)
22)  942,404 0 (1x) Qualität: Fas Cal 895 glänzend Untergrund: blau (ral 3010)	23) 942,408 0 (1x)	25)  942,314 0 (1x)	

Fig. 9:

1)  942 573 0 (1x)	60 2) 942 571 0 (1x)	3)  942 574 0 (1)	116 4) 942 570 0 (1x)
5)  942 481 (1)	6)  942 427 0 (0)		

4.4.1 Identifying Symbols in the Operating Instructions

The safety instructions contained in this manual which could result in personal injury if not followed are identified by the general danger sign:

4.5 Identification of Hazard Warnings

Danger!

Danger!
Type and source of the hazard
Effect: Danger to life or serious injuries.
- **Measures for hazard prevention**

Warning sign

Warning!
Type and source of the hazard
Effect: Danger to life or serious injuries.
- **Measures for hazard prevention**

Caution!

Caution!
Type and source of the hazard
Effect: Danger to life or serious injuries.
- **Measures for hazard prevention**

General function instructions are indicated as follows:

Note!

Note
Type and source of the note
Effect: Economic advantage of the machine
- **Actions to be taken**

Instructions which are attached to the machine need to be followed and kept fully legible.

5 Cabin

5.1 Ladder to driver's cabin

Danger!
Access to cab
Effect: Danger to life or serious injuries.

-
- **It is impermissible to carry passengers on ladder steps or platforms.**
- **Always make certain the ladders are clean. Take special care that no grease or other slippery materials accumulates on the ladders.**
- **When leaving the cab, always switch off the engine and remove the ignition key.**

Fig. 10:

- Ladder (1) to the driver’s cab

5.2 Opening the cabin door

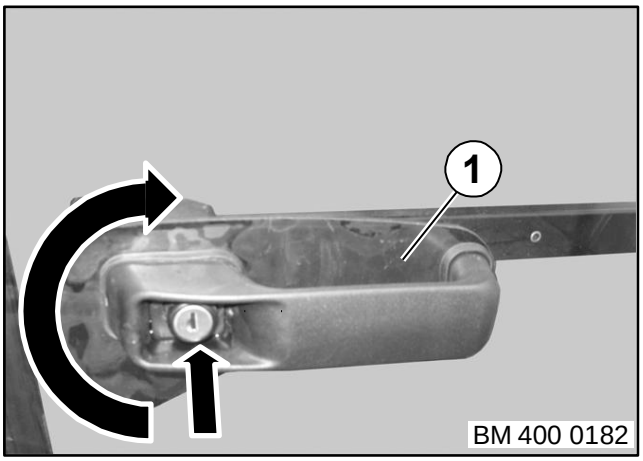


Fig. 11:

- From the outside**:** Use the door key to unlock the door lock (1); press in the button (1) and open the door.

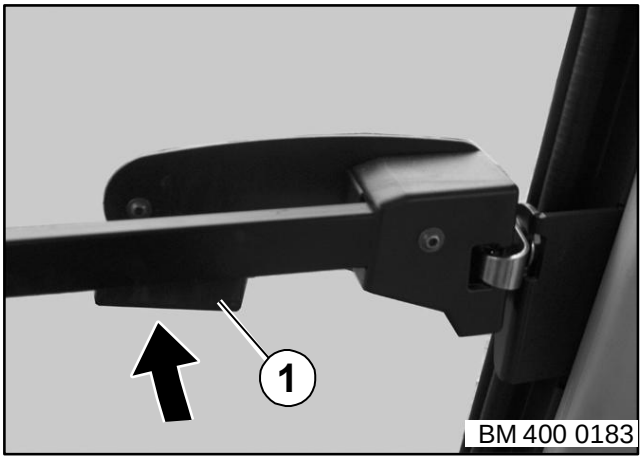


Fig. 12:

- From the inside: Lift the door opening lever (1) and open the door.

5.3 Operators controls

5.3.1 Overview

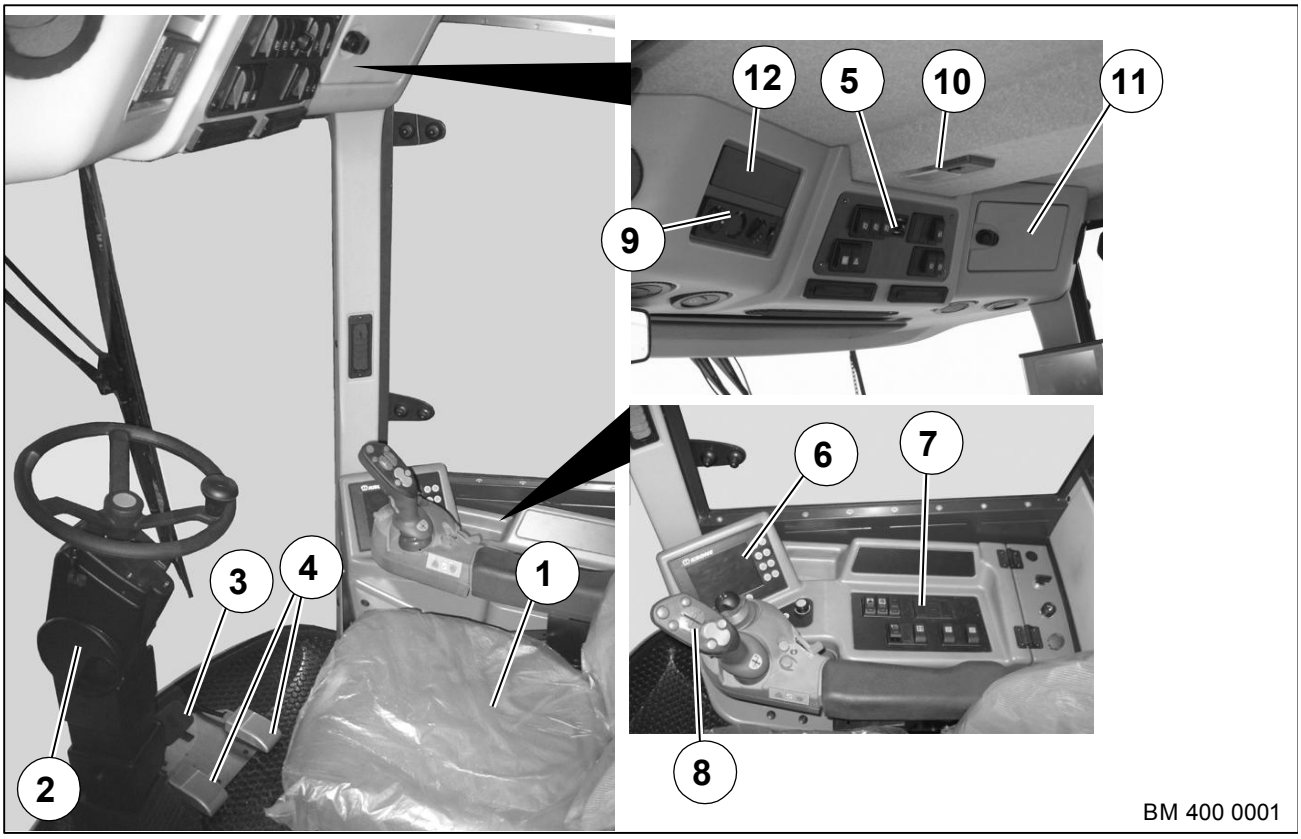


Fig. 13:

1 Driver’s seat
2 Steering column
3 Operating brake
4 Foot switch for sideshift (optional)
5 Switch group roof panel
6 Info Centre
7 Switch panel
8 Multi-function lever
9 Switch group – air conditioning/heating
10 Interior lighting
11 Cooling compartment
12 ISO compartment for radio

5.4 Air comfort seat

Danger!
Brief distraction
Effect: Danger to life, injuries or damage to the machine.

- **The driver's seat must only be adjusted when the machine is stopped.**

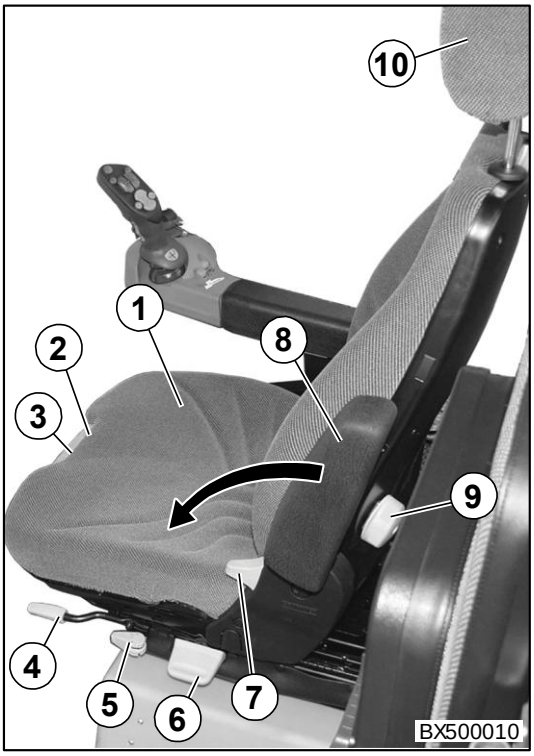


Fig. 14:

The air-cushioned comfort seat (1) can be individually adapted to the requirements of the driver.

Weight adjustment

In order to prevent health problems, the individual driver's weight adjustment should be checked and adjusted prior to operation of the machine. The adjustment should be carried out whilst sitting absolutely stationary.

- Pull the lever (6) upwards briefly (position I).

Height adjustment

The height can be adjusted continuously by means of a hydraulic system. In order to prevent damage, actuate the compressor for a maximum of 1 minute.

- Pull the lever (6) upwards completely (position I) to move the driver's seat (1) up. Press the lever (6) down completely (position II) to move the driver's seat (1) down. When the upper or lower end position of the height adjustment mechanism is reached, the height will be adjusted automatically in order to ensure a minimum spring travel.

Horizontal suspension

The shock load in direction of travel through the driver's seat (1) is cushioned better by the horizontal suspension.

- Swing the lever (5) to the front - the horizontal suspension is active; swing the lever (5) back – the horizontal suspension is switched off.

Longitudinal adjustment

- Pull the locking lever (4) up, and push the driver's seat (1) forward or backward into the requested position. Permit the locking lever (4) to snap into place; after locking, the driver's seat must not be movable into any other position.

Seat angle adjustment

- Pull the left key (3) up and at the same time set the angle of the sitting surface by increasing or decreasing the pressure on the seat surface.

Seat depth adjustment

- Pull the right key (2) up and at the same time bring the sitting surface into the required position by pushing forward and backward.

Headrest

Set the headrest in such a way that the upper edges of the head and the headrest are on the same height, if possible.

- Adjust the height of the headrest (10) by pulling out and pressing down across the noticeable snaps.

Lumbar support

- The height as well as the intensity of the arching in the backrest can be adapted individually by turning the hand wheel (9) to the left or right.

Adjustment of the backrest

- Pull the locking lever (7) up to set the inclination of the backrest. Permit the locking lever (7) to snap into place – after locking, the backrest must not move into a different position any more.

5.4.1 Setting the left armrest

Fig. 15:

- Tilt the armrest (8) up or down as requested.
- Remove the cover cap (1) to adjust the height of the armrest.
- Undo the hexagon nut; move the armrest into the requested position and tighten the hexagon nut again. Press the cover cap (11) onto the hexagon nut again.

5.4.2 Right armrest

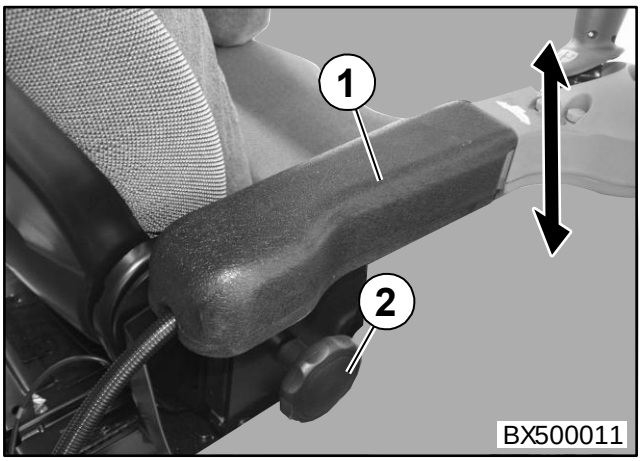


Fig. 16:

The right armrest (1) and the multi-function lever are one unit.

Setting the right armrest

- Undo the clamping screw (2); move the armrest (1) into the requested height and tighten the clamping screw (2) again.

5.4.3 Storage compartment for first-aid kit/operating instructions

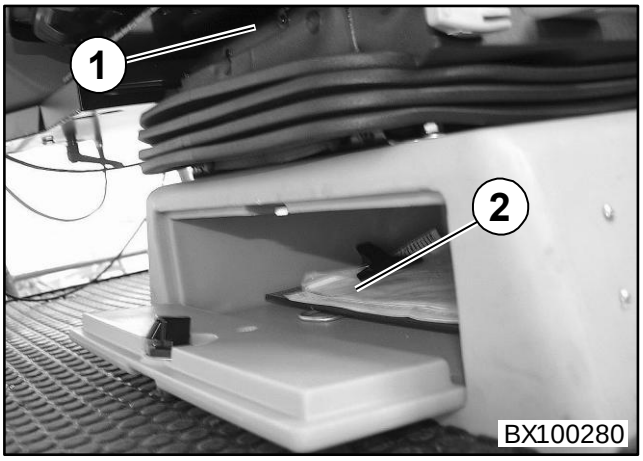


Fig. 17:

The storage compartment for the first-aid kit and the operating instructions (2) are located below the front of the driver's seat (1).

5.4.4 Passenger seat

Danger!
Hindrance to driver in the cab
Effect: Danger to life, injuries or damage to the machine.

- **Other than the driver, only one other person is permitted on the passenger's seat in the cab during work and transport travel.**

Fig. 18:

Folding down the passenger's seat (1).

5.4.5 Emergency exit

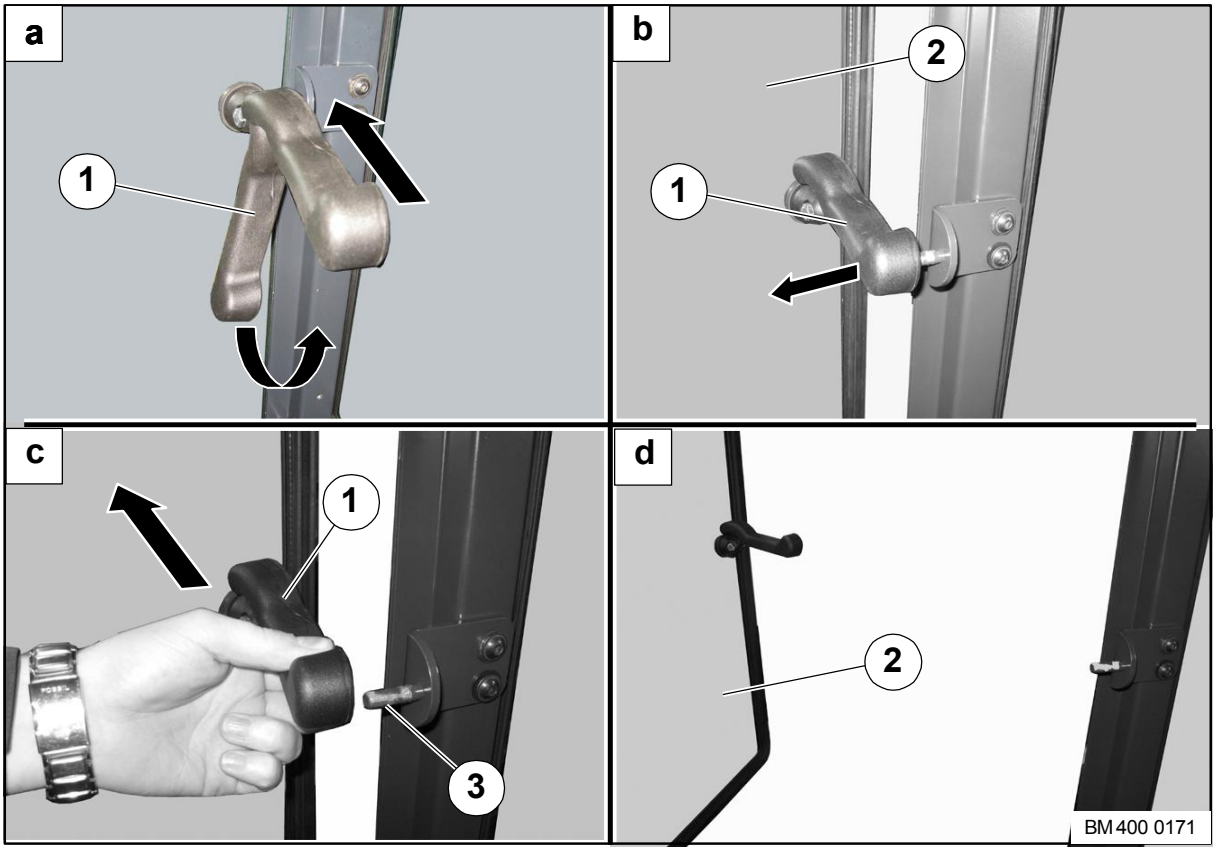


Fig. 19:

In case of an emergency, the side window on the RH side in the direction of travel, next to the driver's seat, can be opened as an exit door.

To do this:

- Swivel the lever (1) upward.
- Press the lever (1) outwards and open the side window (2) slightly.
- Pull the lever (1) from the pin (3).
- Open the side window (2) completely

5.4.6 Diagnosis socket - motor

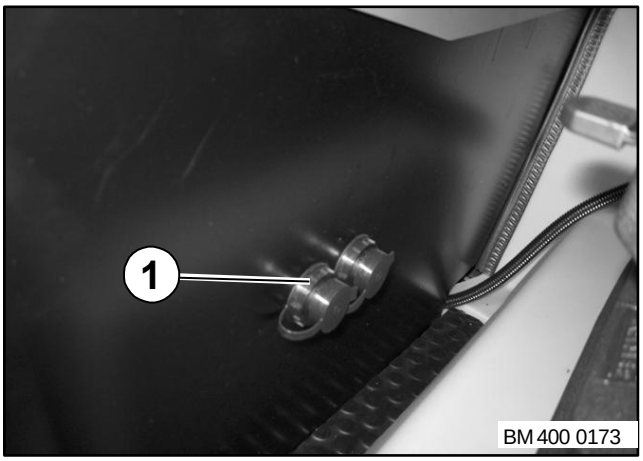


Fig. 20:

The diagnostics socket (1) for the engine is located in the driver's cab on the bottom right in the switch panel next to the driver's seat in the direction of travel.

5.5 Steering column and foot pedals

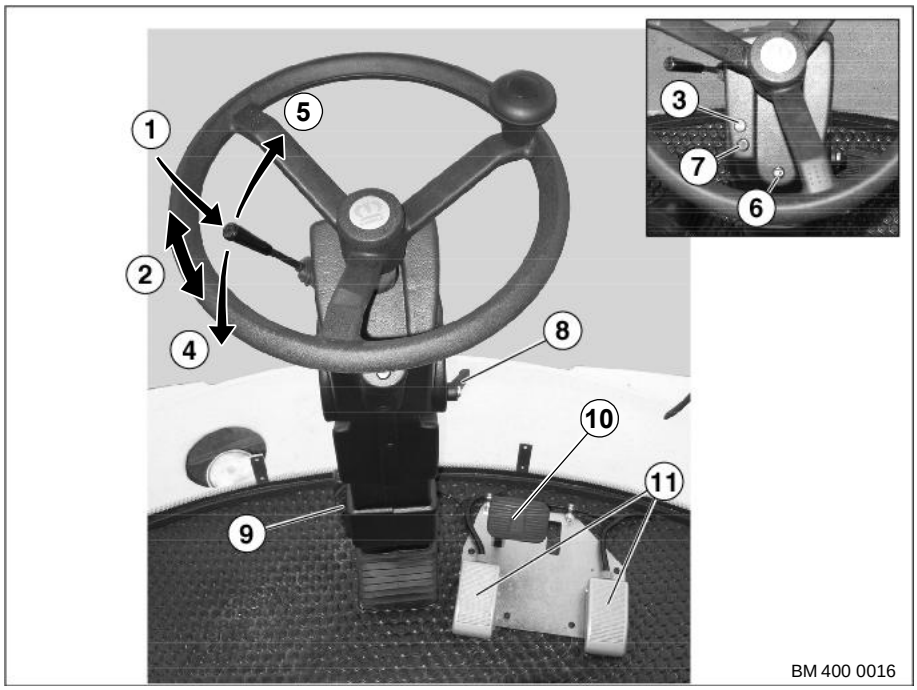


Fig. 21:

1 Button for horn
2 Indicator switch
3 Pilot lamp indicator
4 Full beam
5 Headlamp flasher
6 Full beam indicator light
7 Pilot lamp – trailer function
8 Release lever for horizontal steering column adjustment
9 Release lever for horizontal and vertical steering column adjustment
10 Operating brake
11 Foot pedal for sideshift (optional)

5.5.1 Steering column adjustment

Danger!
Loss of control over the machine
Effect: Danger to life, injuries or damage to the machine.

- **Adjust the steering column only when the machine is at a standstill.**
- **The steering column (1) is held in vertical position by spring pressure. Before actuating the pedal (2), hold the steering wheel with both hands.**

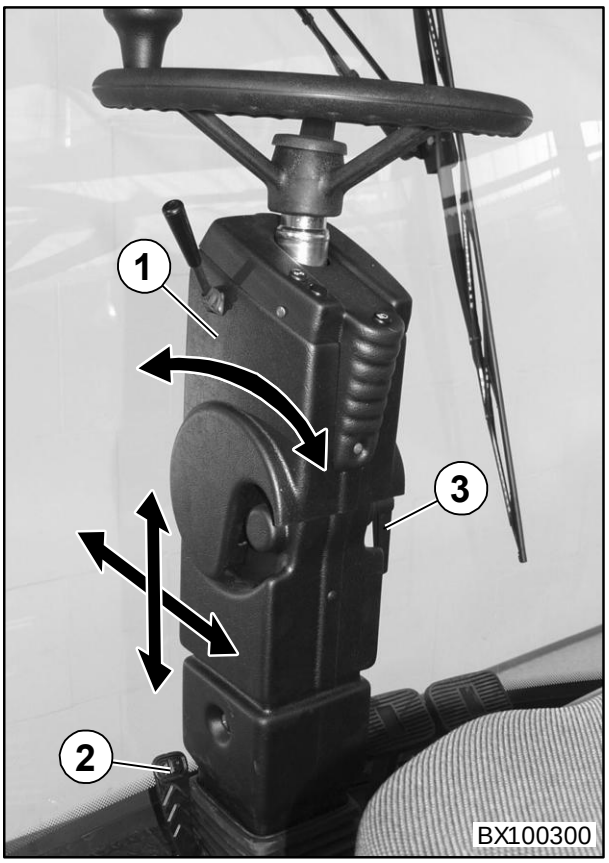


Fig. 22:

Horizontal and vertical steering column adjustment

- Use the pedal (2) to release the steering column (1), and adjust to the desired position. After the pedal (2) has been released, the steering column (1) will be locked.

Horizontal steering column adjustment

- Loosen unlocking lever (3). Move the steering column (1) into the requested position. Lock the release lever (3) again.

5.5.2 Horn

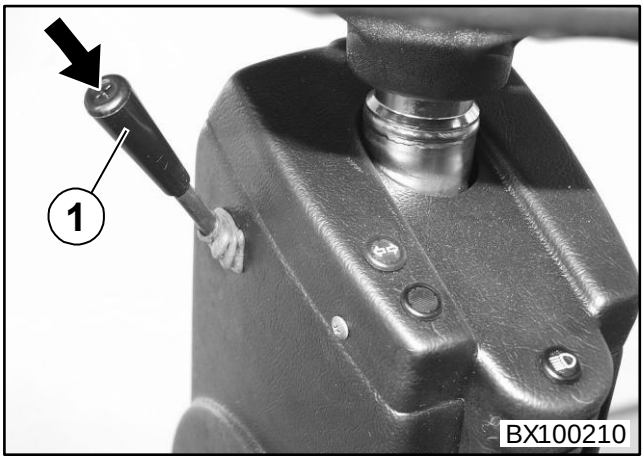


Fig. 23:

- When the push-button (1) is pressed, the horn is sounded.

5.5.3 Indicator switch

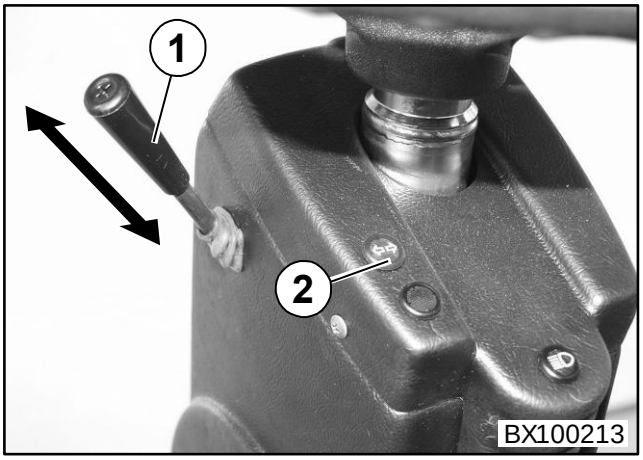


Fig. 24:

Note

In road traffic the change of travelling direction is indicated by a flashing light.

- Switch (1) forward – right indicator
- Switch (1) backward – left indicator
- Set the switch to neutral position by hand.

The indicator pilot lamp (2) will light up when the indicator has been switched on.

5.5.4 Full beam

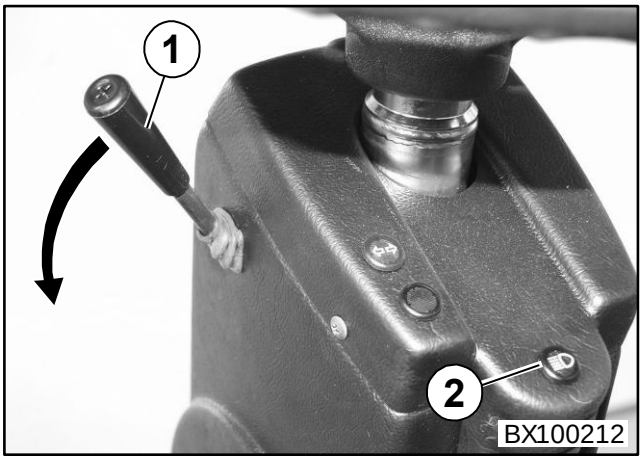


Fig. 25:

Note

High beam only when dipped beam is turned on.
Turn off high beam when a vehicle is approaching from the opposite direction.

- Switching high beam on – press lever (1) down.
- Switching high beam off – press lever (1) up.

When high beam is switched on, the blue pilot lamp (2) will be lit.

5.5.5 Headlamp flasher

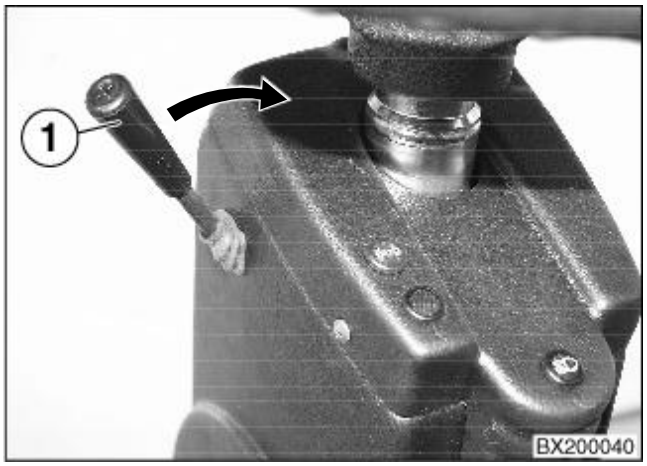


Fig. 26:

- Pull the headlamp flasher lever (1) up.

5.5.6 Using the operating brake

In road traffic

Danger!
Function of service brake is limited.
Effect: Danger to life, injuries or damage to the machine.

- **Check the brake function before starting every trip.**

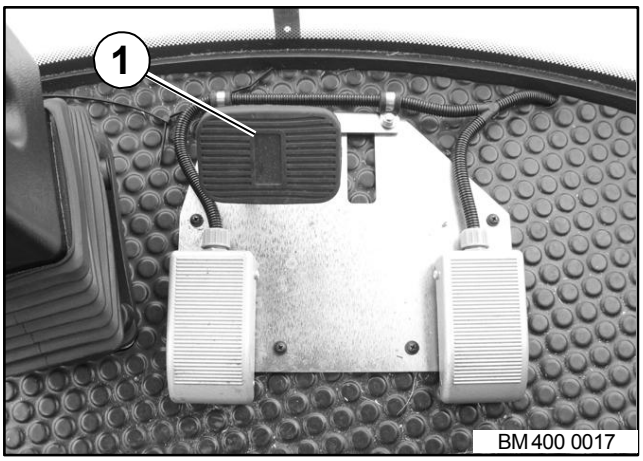


Fig. 27:

5.6 Switch group roof panel

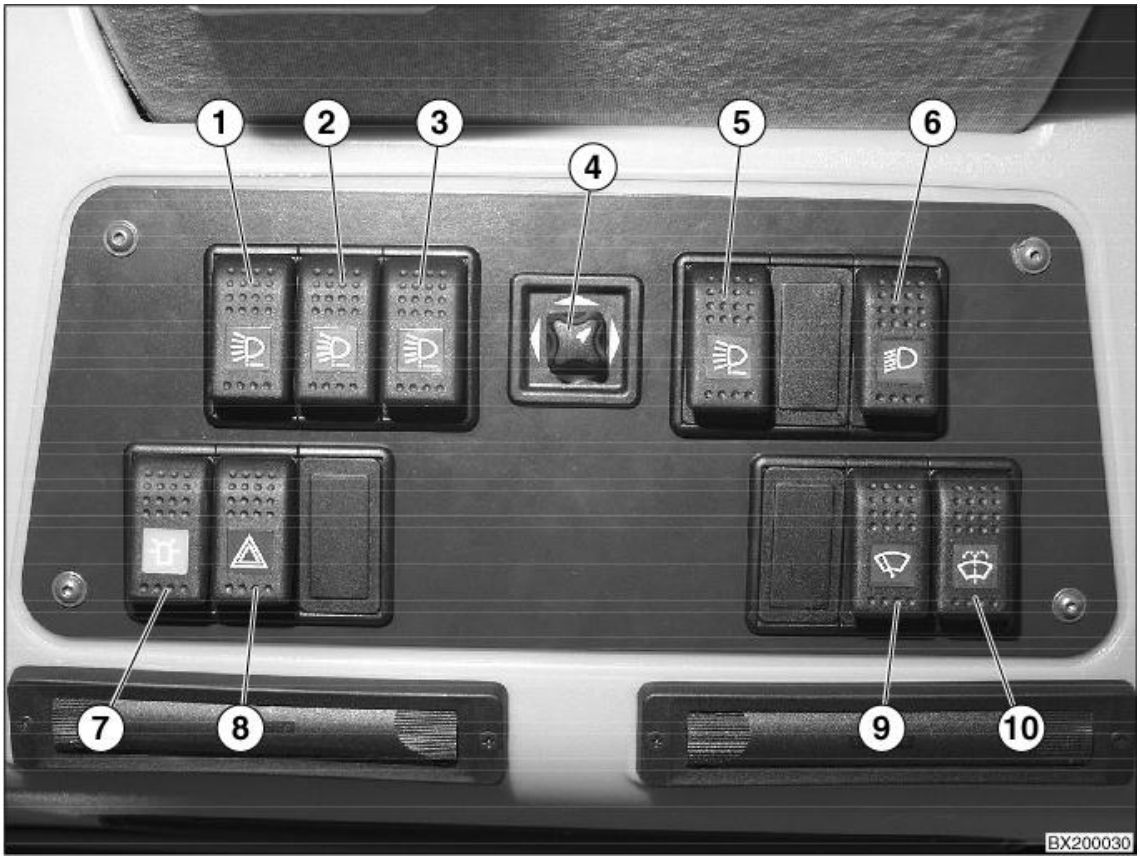


Fig. 28:

12 Working floodlights pointing down the side, and working floodlights pointing at the right and left mowing units
13 Cab roof floodlights
14 Bottom working floodlight pointing to the front
15 Mirror adjustment (right outside mirror only)
16 Rear working floodlights
17 Side light/dipped beam
18 Allround lights (optional)
19 Hazard warning flasher
20 Windshield wipers
21 Windshield washer unit

5.7 Lighting

5.7.1 Overview

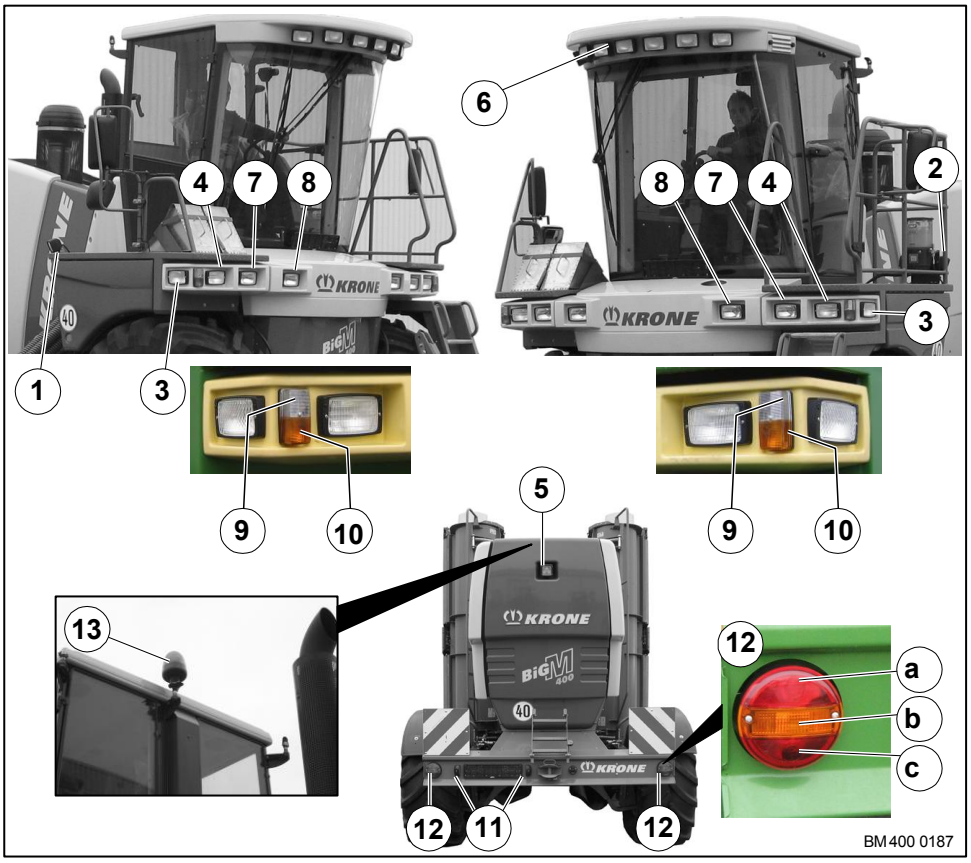


Fig. 29:

1 Working floodlights for mowing unit right
2 Working floodlights for mowing unit left
3 Working floodlights, side lower
4 Bottom working floodlight pointing to the front
5 Rear working floodlights
6 Cab roof floodlights
7 Dipped beam
8 Full beam
9 Front parking light (clearance lamp)
10 Indicators / hazard warning lights
11 Licence plate lamp
12
a) Brake light
b) Indicators / hazard warning lights
c) Tail light / rear parking light (clearance lamp)
13 Allround light (optional)

5.7.2 Indicator, hazard warning flasher and brake light

Note

In road traffic the change of travelling direction is indicated by a flashing light.

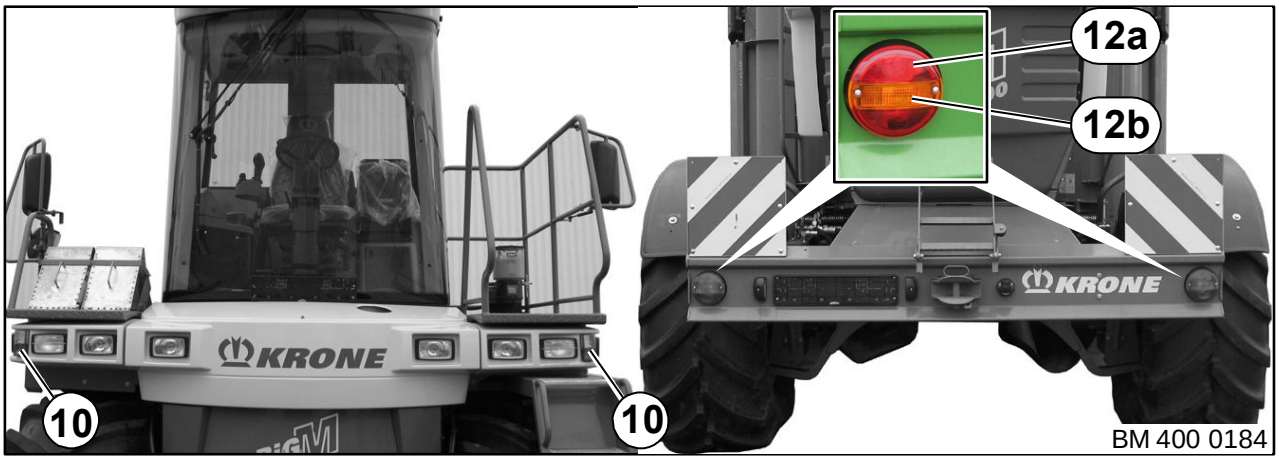


Fig. 30:

5.7.2.1 Switching on the indicator

- Actuate the direction indicator on the steering wheel; the indicators (10, 12b) will flash on one side (right/left).

5.7.2.2 Brake light

When the ignition is switched on, the brake lights (12a) will light up as soon as the operating brake is pressed.

5.7.2.3 Switching on the hazard warning flasher

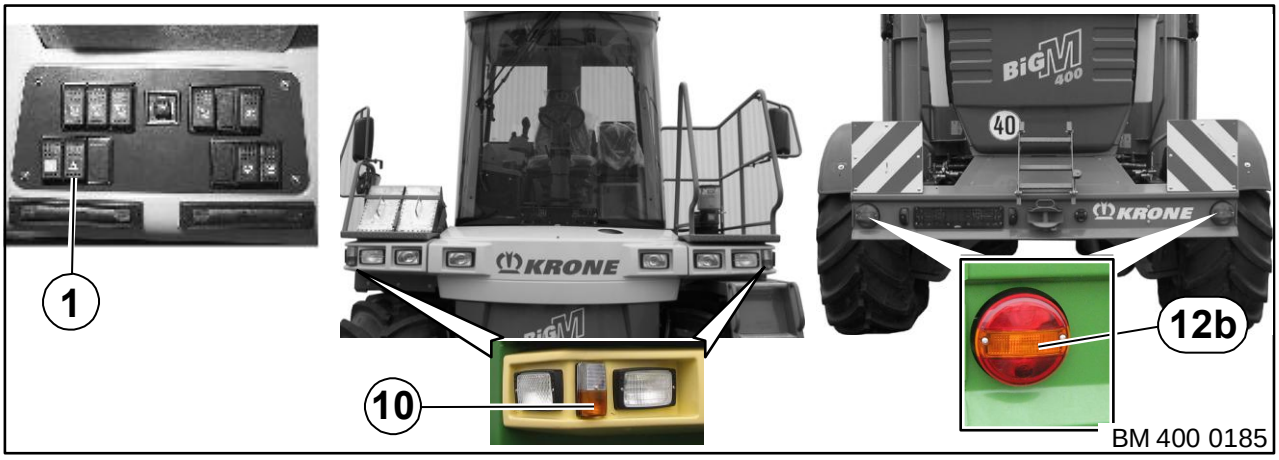


Fig. 31:

The switch (1) for the hazard warning flasher is located in roof panel switch group.

- Actuate the rocker switch (1). The red pilot lamp in the switch (1) will start flashing.
- When the hazard warning flasher has been switched on, all indicators (10, 12b) will flash at the same time.

5.7.3 Side light/dipped beam

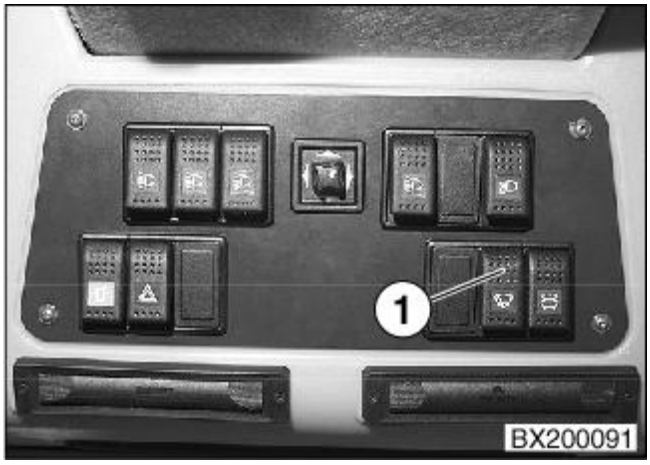


Fig. 32:

The rocker switch (1) for the parking light and the dipped beam is located in the roof panel switch group.

The switch has three positions:

I - Off

II - Parking light

III – Dipped beam

5.7.3.1 Switching on the parking light

Fig. 33:

- Set the rocker switch (1) to position II:

The following lamps will light up when the parking light is switched on:

9 Front parking light
12c Rear parking light

5.7.3.2 Switching on the dipped beam

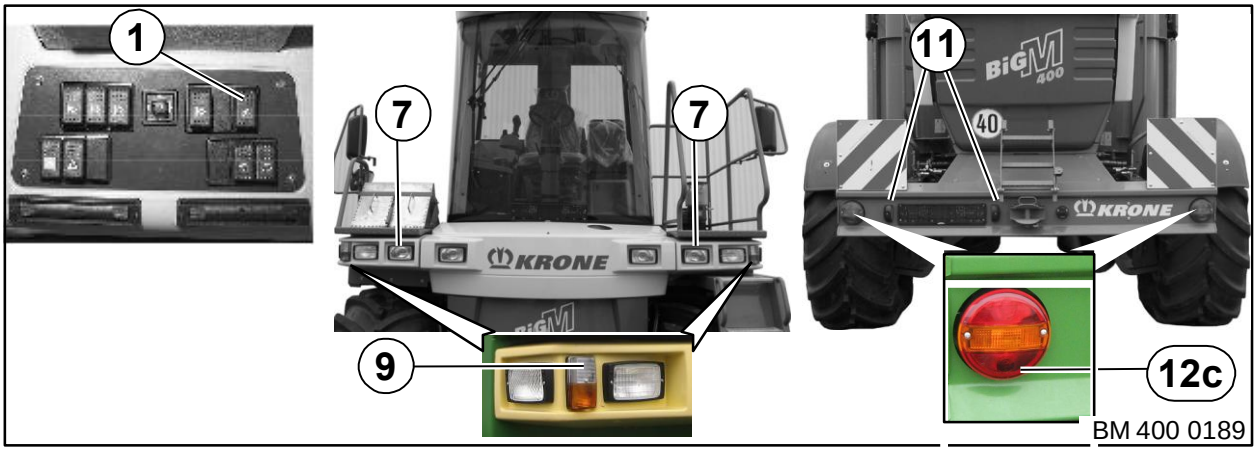


Fig. 34:

- Set the rocker switch (1) to position III.

When dipped beam is turned on, the following are lit:

7 Dipped beam
9 Front parking light
11 Licence plate lamp
12c Tail light

Note

The dipped beam can be switched on only when the ignition has been switched on.

5.7.4 Working floodlights

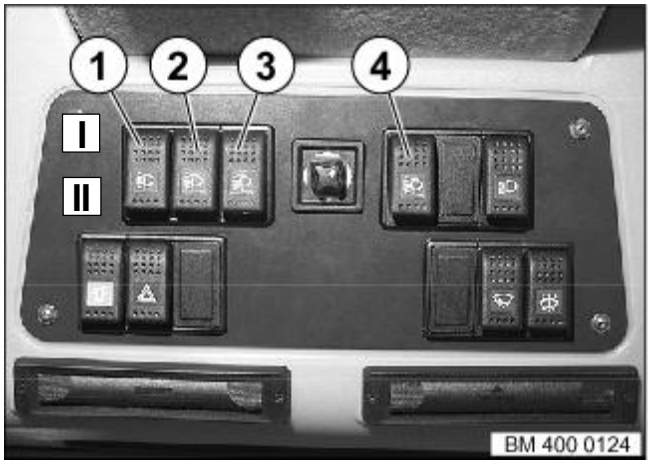


Fig. 35:

The rocker switch (1,2,3,4) for the working floodlights is located in the roof panel switch group.

14 Working floodlights pointing down the side, and working floodlights pointing at the right and left mowing units

15 Cab roof floodlights

16 Bottom working floodlight pointing to the front

17 Rear working floodlights

It has 2 settings:

I Off

II On

Note

Always switch the working floodlights off during road travel!

5.7.4.1 Working floodlights "down the side and at the right/left mowing units"

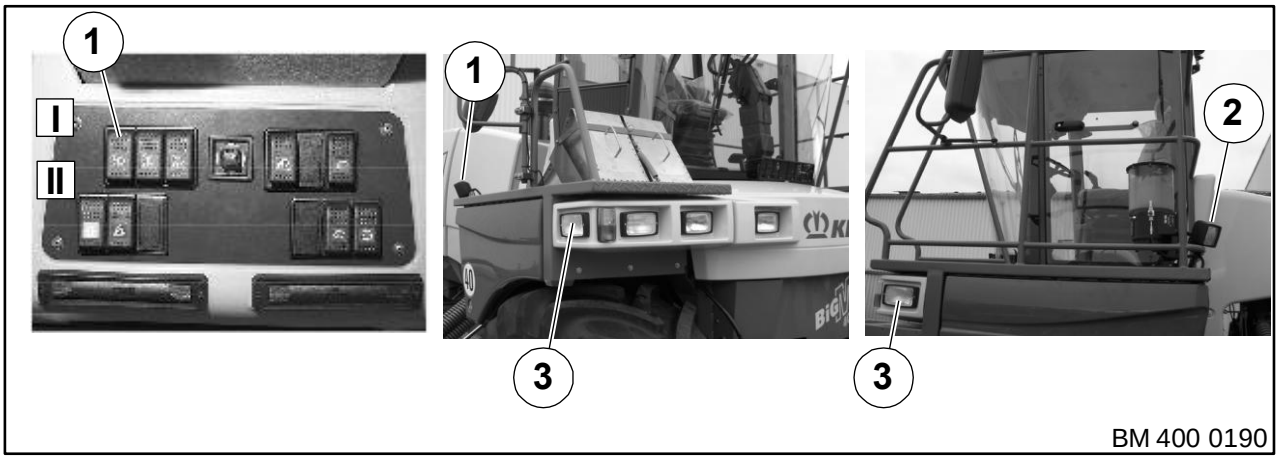


Fig. 36:

The two working floodlights (1,3) can be switched on only when the parking light is switched on.

- Set the rocker switch (1) to position II:

When the rocker switch (1) is turned on, the following are lit:

1 Working floodlights for mowing unit right
2 Working floodlights for mowing unit left
3 Working floodlights, side lower

5.7.4.2 Working floodlights "Cab and rear"

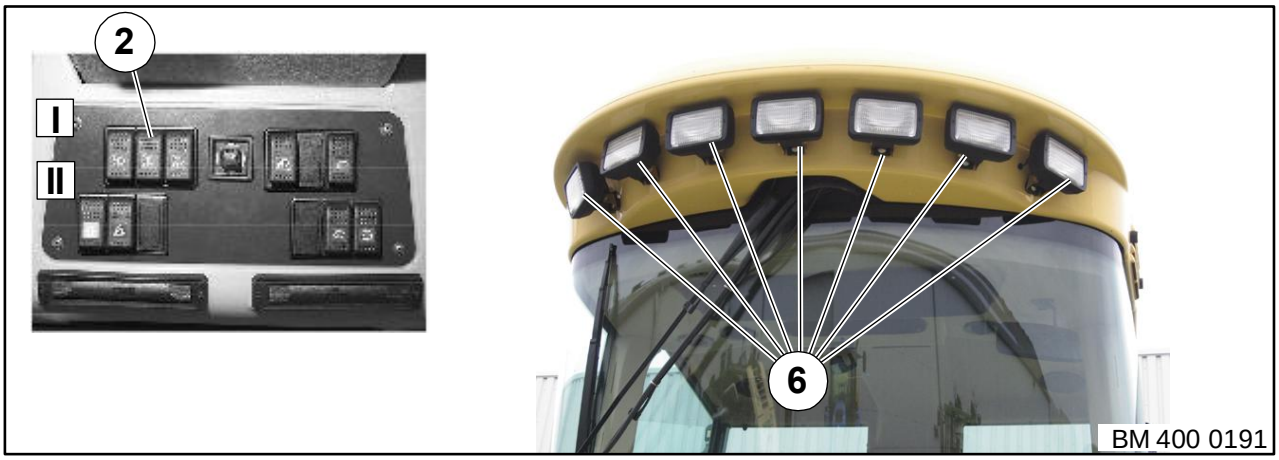


Fig. 37:

The 7 working floodlights (6) on the cab roof can only be switched on when the parking light is switched on.

- Set the rocker switch (2) to position II:

When the rocker switch (2) is turned on, the following are lit:

6 Cab roof floodlights

5.7.4.3 “Bottom front” working floodlight

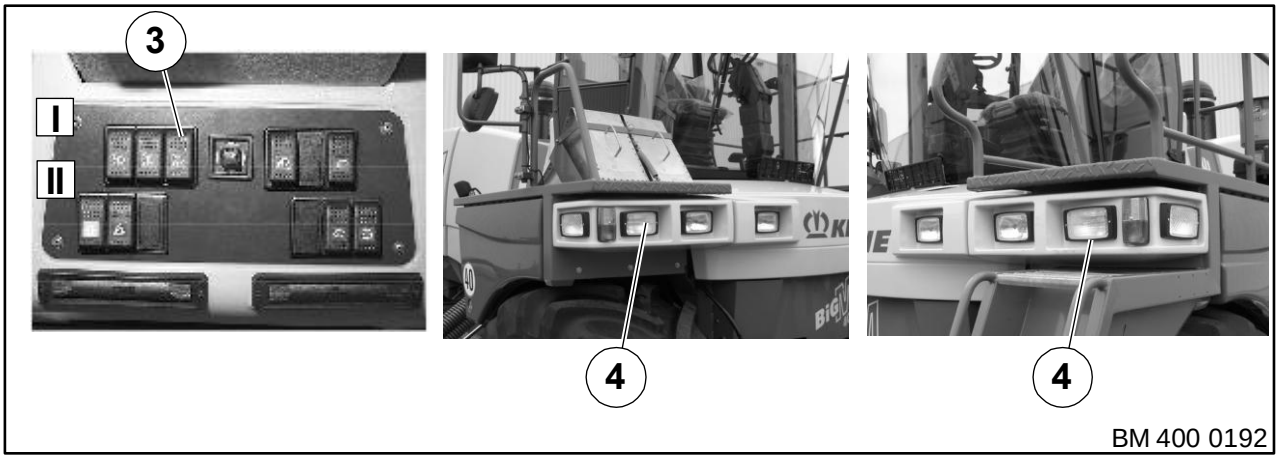


Fig. 38:

- Set the rocker switch (3) to position II:

When the rocker switch (3) is turned on, the following are lit:

4 Working floodlight front (right and left)

5.7.4.4 Working floodlight "rear"

Fig. 39:

- Set the rocker switch (4) to position II:

When the rocker switch (4) is turned on, the following are lit:

5 Working floodlight rear

5.7.5 Allround lights (optional)

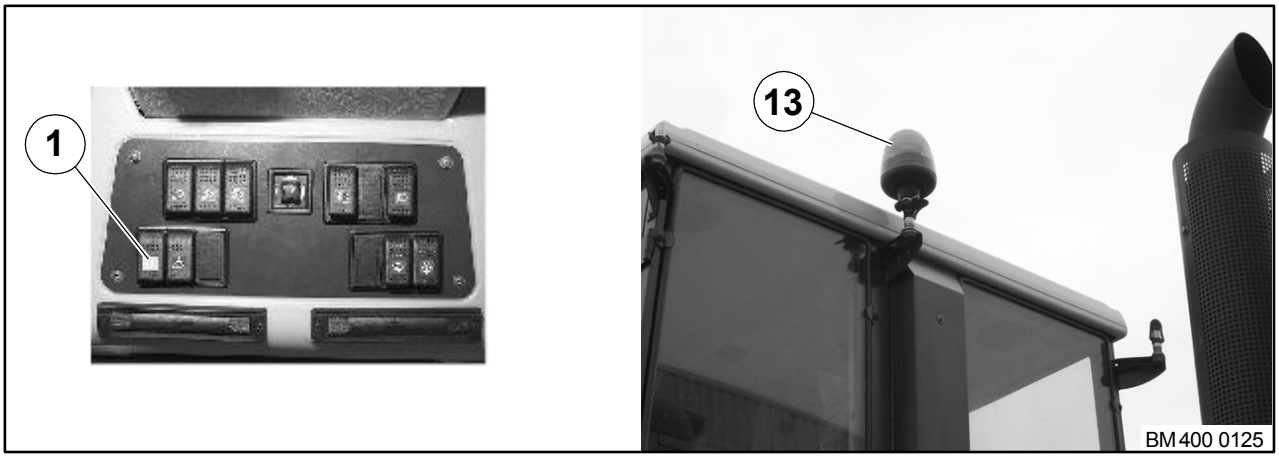


Fig. 40:

Option depends on user's country

In some countries the allround lights must be switched on in road traffic.

Switch on the allround lights (13)

The switch (1) for the allround lights is located in the roof panel switch group.

- Actuate the rocker switch (1). The orange pilot lamp in the switch (1) will light up.

5.7.6 Interior lighting

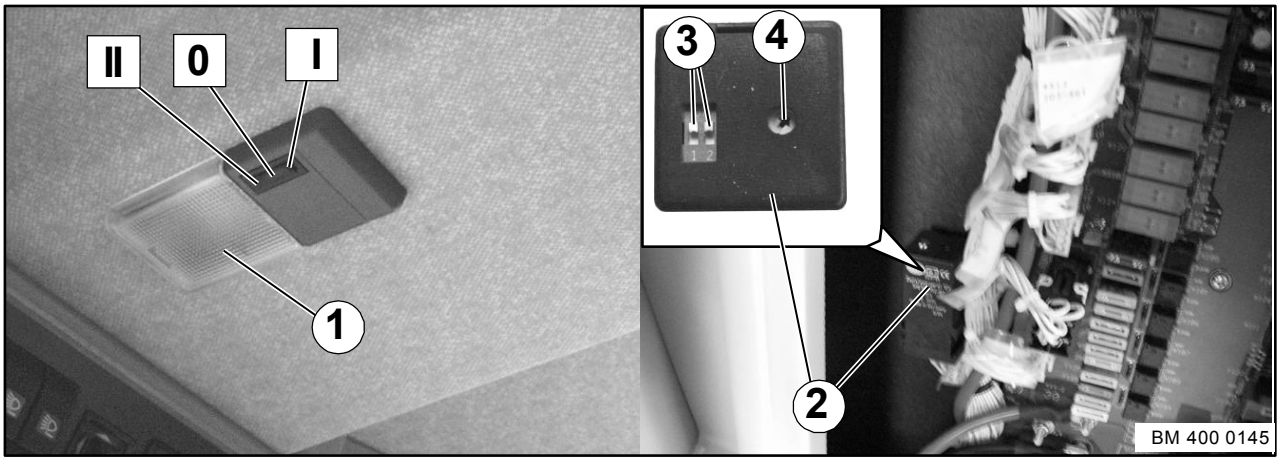


Fig. 41:

The interior lighting control (1) is located on the cab roof. It consists of a 3-level switch.

Overview:

I = Continuous lighting

0 = Lighting off

II = Delayed switch-off (after ignition stage II is turned off, interior lighting will stay on for the amount of time set on time relay (2))

The time for switch-off delay can be adjusted with the time relay (2).

To do this:

- Open the cover on the left next to the driver's seat.
- Move switch (3) S1 and S2 to the desired position (see table).

S1	S2	(s)
Off	Off	110…900
On	On	14…110
On	Off	2,5 14
Off	On	0…2,5

Use a screwdriver to make fine adjustments to the speed potentiometer (4) of the time relay (2) that controls the switch-off delay (amount of time) to match time intervals t(s).

5.7.7 Spotlight

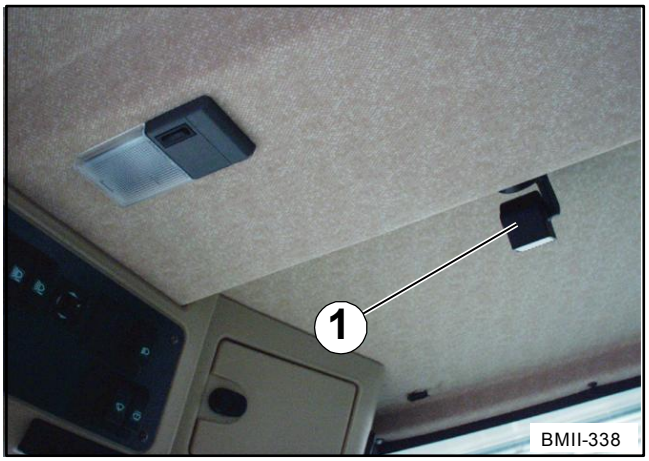


Fig. 42:

The spotlight (1) is on the cab roof.

- The spotlight can be turned on and off at any time by activating the switch built into it.

5.8 Outside mirrors

Danger!
Impaired vision
Effect: Danger to life, injuries or damage to the machine.

- **Before starting to drive, adjust the mirror so that the rear driving area is fully visible.**

5.8.1 Left outside mirror

Fig. 43:

- Adjust the left outside mirror (1) manually.

5.8.2 Right outside mirror and anti-collision mirror

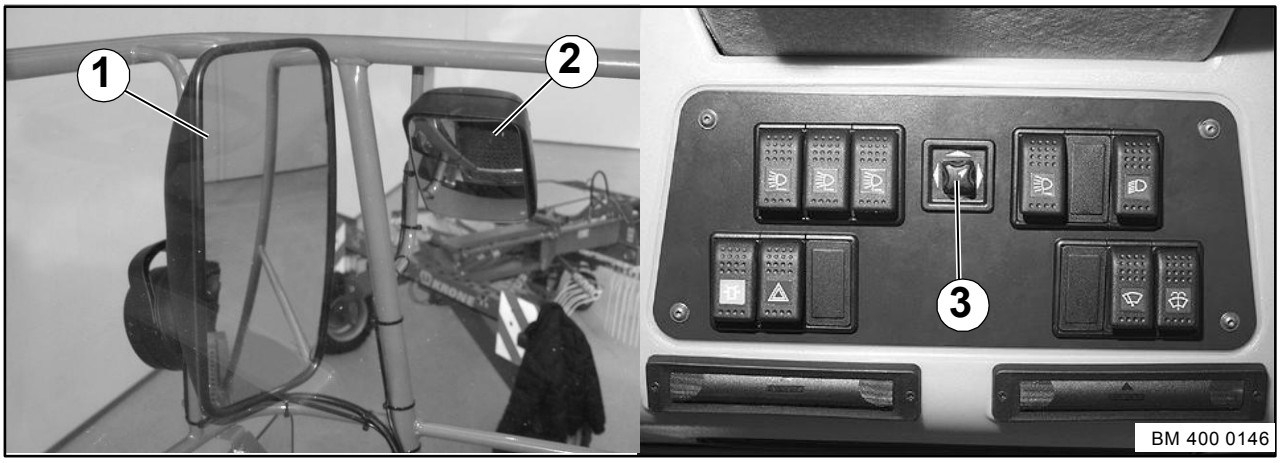


Fig. 44:

The right outside mirror (1) and the anti-collision mirror (2) are electrically adjustable. The switch (3) is located in the roof panel.

Setting the anti-collision mirror

Note

Set the anti-collision mirror in such a way that the ground area next to the right front wheel can be checked prior to starting.

- Turn the switch (3) to the left (arrow to the left).
- Press the switch (3) up, down and to the side until the anti-collision mirror (2) is set correctly.

Setting the right outside mirror

- Turn the switch (3) to the right (arrow to the right).
- Press the switch (3) up, down and to the side until the anti-collision mirror (1) is set correctly.

5.9 Inside mirror

Fig. 45:

Adjust the inside mirror manually.

Adjust the inside mirror according to requirements.

5.10 Sun blind

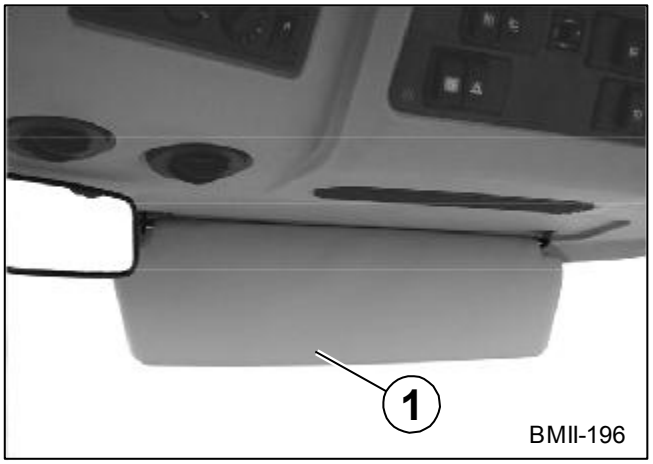


Fig. 46:

Adjust the sun blind according to requirements.

5.11 Windshield wipers

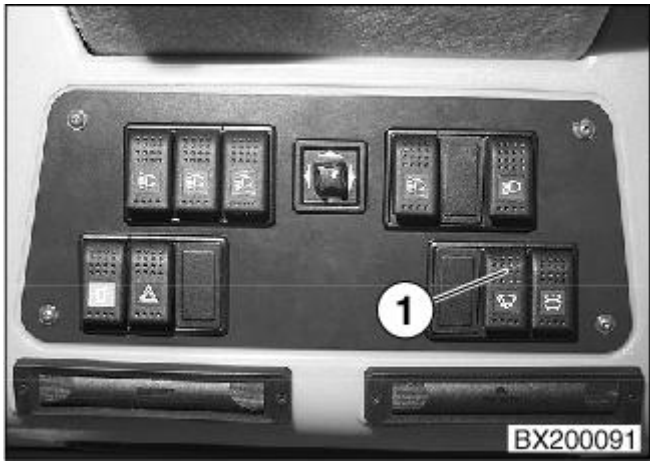


Fig. 47:

The rocker switch (1) for the windshield wipers is located in the roof panel.

The switch has three positions:

I - Off
II - Interval
III - Continuous operation

Switching on the windshield wipers

- Actuate the rocker switch (1).

5.12 Washer system - windshield

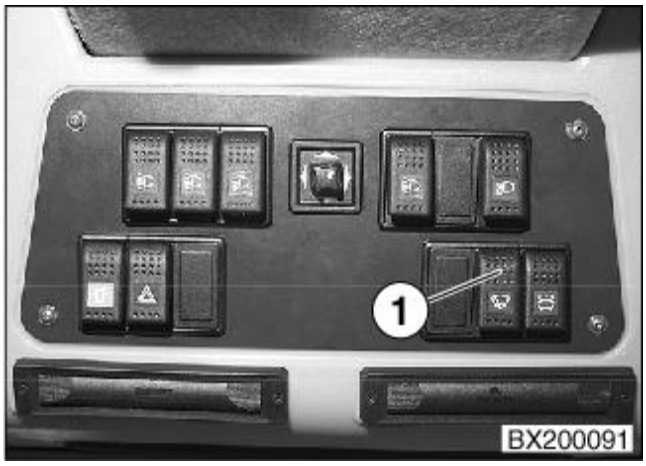


Fig. 48:

The rocker switch (1) for the windshield washer system is located in the roof panel.

Switching on the windshield washer system

- Actuate the rocker switch (1).

5.13 Switch panel

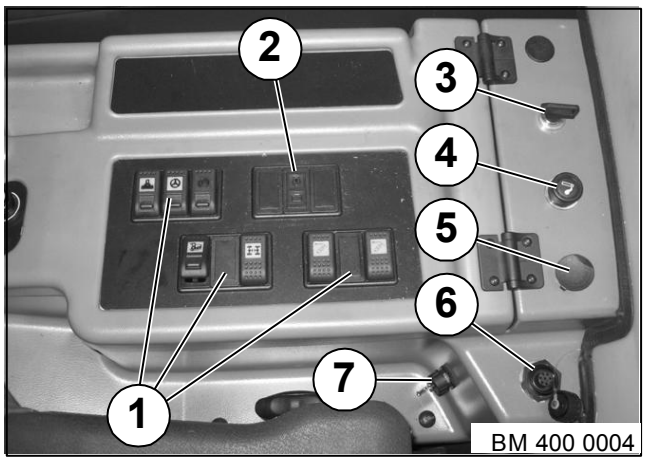


Fig. 49:

1 Panel switches
2 Pilot lamps
3 Ignition lock
4 Cigarette lighter
5 12 V socket
6 CAN diagnostics socket
7 USB connection

5.14 Panel switches and pilot lamps

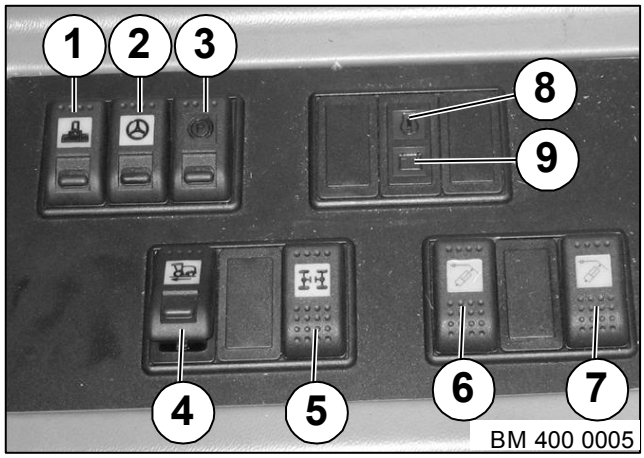


Fig. 50:

1 Release switch – road/field
2 Autopilot release switch (optional)
3 Release switch – holding brake
4 Travelling gear release switch
5 Axle separation key
6 Switch hydraulic auger hood left (optional)
7 Switch hydraulic auger hood right (optional)
8 Engine failure pilot lamp
9 Charge indicator lamp

5.14.1 Actuating release switches

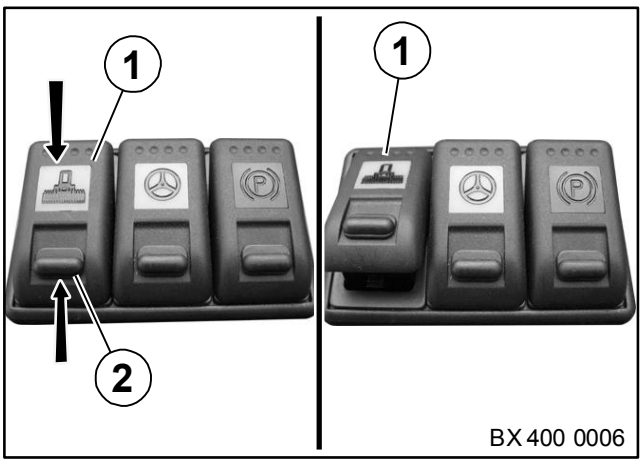


Fig. 51:

Note

Locked release switch

Effect: Release switches cannot be activated.

- **To actuate the release switches (1), push the lock (2) forward and press the release switch.**

5.14.2 Release switch – road/field

Danger!

Release switches for road travel not in position (I) "Road travel"

Effect: Danger to life or serious injuries.

- **The road/field release switch must be in position "I" for road travel.**
- **This ensures that only the travelling gear, steering and brakes are activated.**

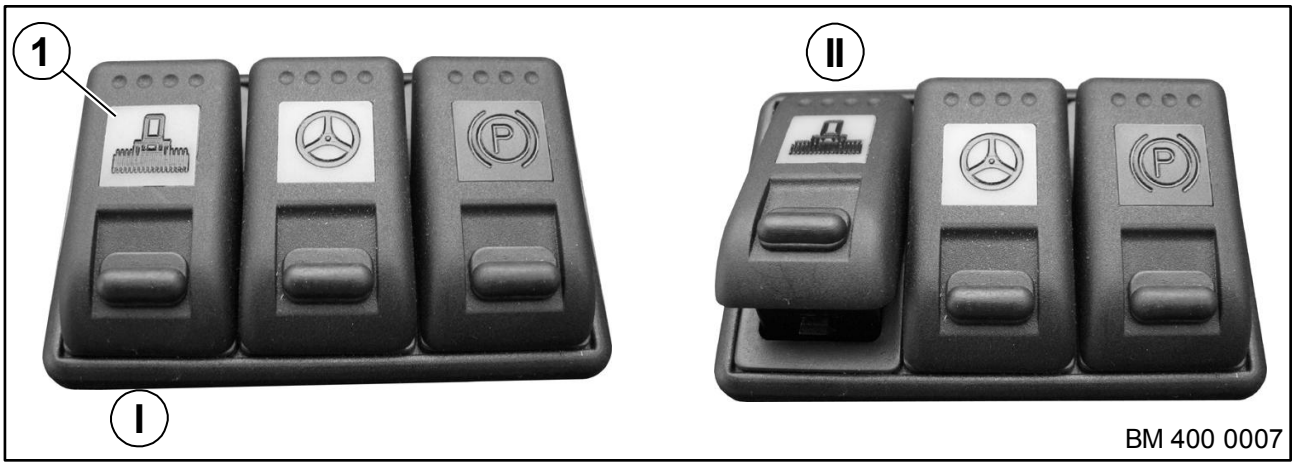


Fig. 52:

The road/field release switch (1) is used to switch from road travel to field operation and vice versa.

I - Road travel

II - Field mode

Note

Depending on the position of the "Road/field" release switch, the "Road travel or field mode" basic screen appears in the Info Centre.

5.14.3 Autopilot release switch / - optional

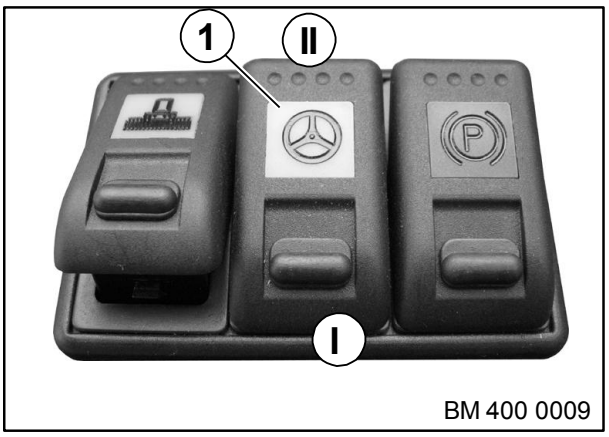


Fig. 53:

Actuating the autopilot release switch (1) releases the autopilot function.

Note

Autopilot is not released

- **Autopilot is only available in Field mode with the travelling gear turned on**

- The road/field release switch must be active in field operation and the travelling gear release switch must be switched on.

I - Autopilot off

II - Autopilot released

Note

Autopilot is not released

- **For further information, please consult the operating instruction "Autopilot Brief Introduction" included with delivery**

5.14.4 Release switch - holding brake

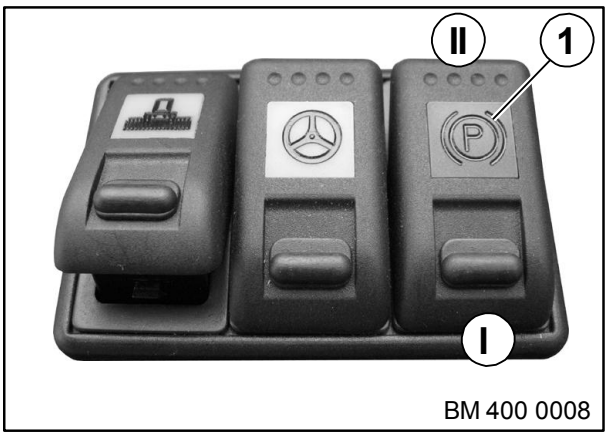


Fig. 54:

Note

Parking brake engaged
Effect: Brake overheating

- **Do not drive with the parking brake engaged.**
- **The holding brake is applied automatically when the ignition is switched off.**

5.14.5 Release switch travelling gear

Danger!

Unintentional movement of the machine

Effect: Danger to life, injuries or damage to the machine.

- **No persons may be present in the direct hazardous area of the machine when the travelling gear release switch is actuated!**
- **Always remove the ignition key before leaving the cabin.**

To turn off the machine:

- **Activate the parking brake switch; move the travelling gear switch (1) to position off (I).**

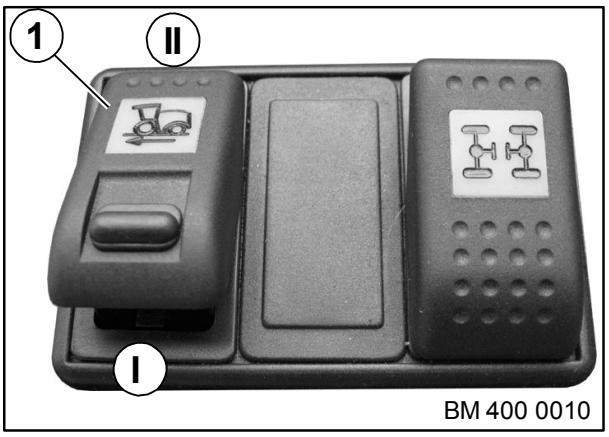


Fig. 55:

When the travelling gear release switch (1) is actuated, the travelling gear is released.

I - Travelling gear off

II - Travelling gear on

Note

Mower drives cannot be switched on.

- **When the travelling gear is switched off (position II), the mowing unit drive cannot be switched on.**

5.14.6 Axle separation key

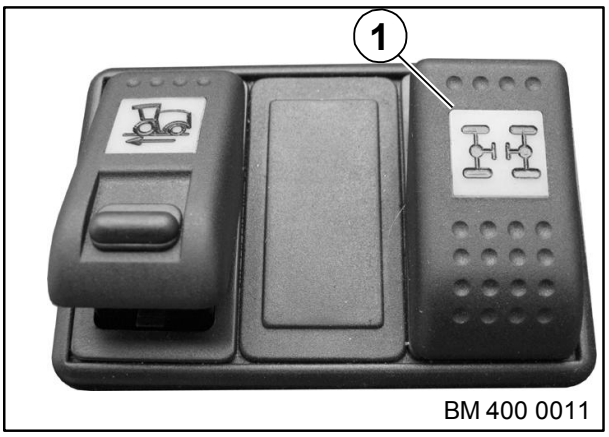


Fig. 56:

Actuating the axle separation key switches axle separation on or off.

Note

Axle separation does not turn on

- **Axle separation can only be activated in drive level 1 (field mode).**
- **When activating the axle separation, the maximum top speed is 14 km/h (instead of 19 km/h).**
- **If the axle separation is switched when travelling faster than 14 km/h, the electronics prevent the axle separation from being activated. Only after the speed has been reduced to below 14 km/h, are the electronics, the valves, and the axle separation activated.**

- Actuate axle separation key (1) – axle separation switched on
- Actuate axle separation key (1) again – axle separation switched off

5.14.7 Engine failure pilot lamp

Caution!
"Engine failure" pilot lamp (1) is lit
Effect: Damages to the machine

- **Switch off engine immediately.**
- **Rectify the fault.**

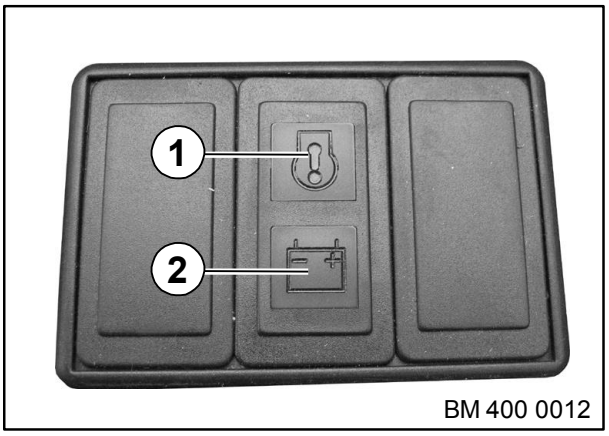


Fig. 57:

5.14.8 Charge indicator lamp

The charge indicator light (2) will light up, if the output voltage of the three-phase generator is not sufficient to charge the batteries.

- Check the cables and connections on the three-phase generator and on the battery.
- Check the V-belt on the three-phase generator.

5.14.9 Ignition lock

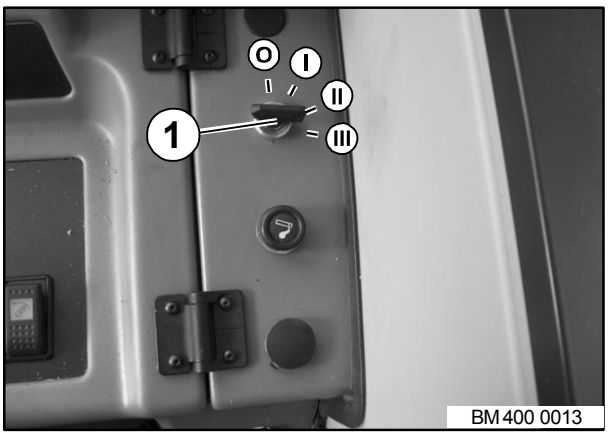


Fig. 58:

The ignition lock (1) has four positions:

0 - Off

I - Electric circuit for electronics is switched on

II The ignition is switched on

III - Start position

5.14.10 Cigarette lighter / 12-V socket

Caution!

Hot cigarette lighter!

Effect: Burns

- **Only hold the hot cigarette lighter by the handle.**
- **Never hold onto the cigarette lighter (1) when it is pushed in.**

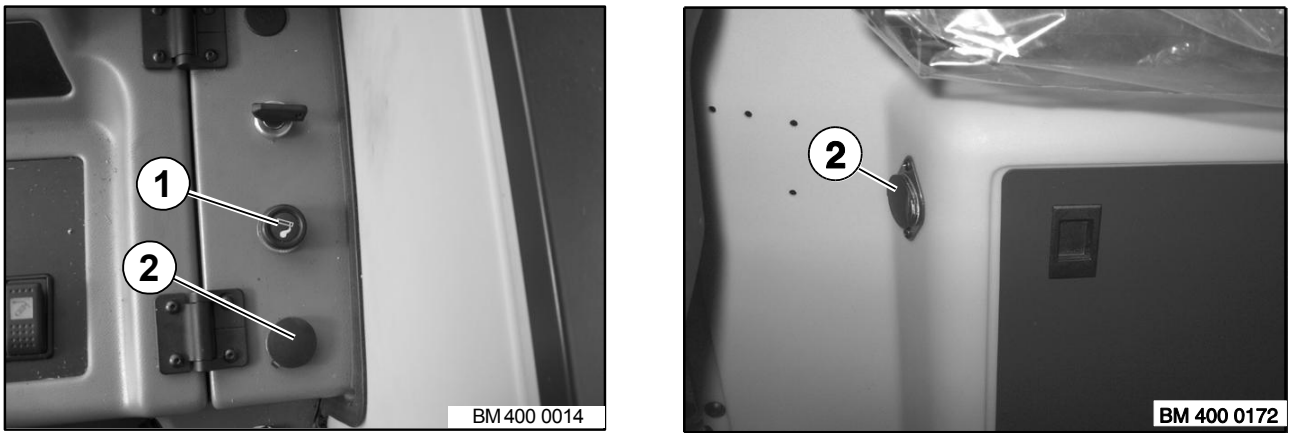


Fig. 59:

Press the cigarette lighter (1) in; when the required temperature is reached the insert will come out by itself.

The socket (2) can be used to connect other power consumers with 12 volts and a maximum of 10 amperes. When the engine has been switched off, the battery will be discharged. Use the specified plug to connect accessory units.

Note

An additional 12-V socket is located in the driver's cab on the bottom left next to the driver's seat facing in the direction of travel.

5.14.11 Diagnostics socket / USB connection

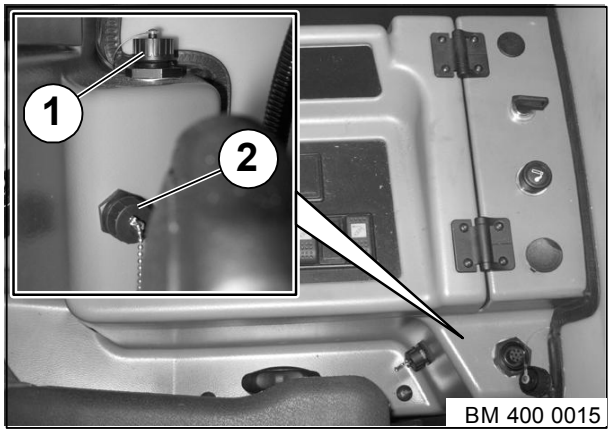


Fig. 60:

- CAN interface (1)
- USB connection (2)

5.15 Multi-function lever

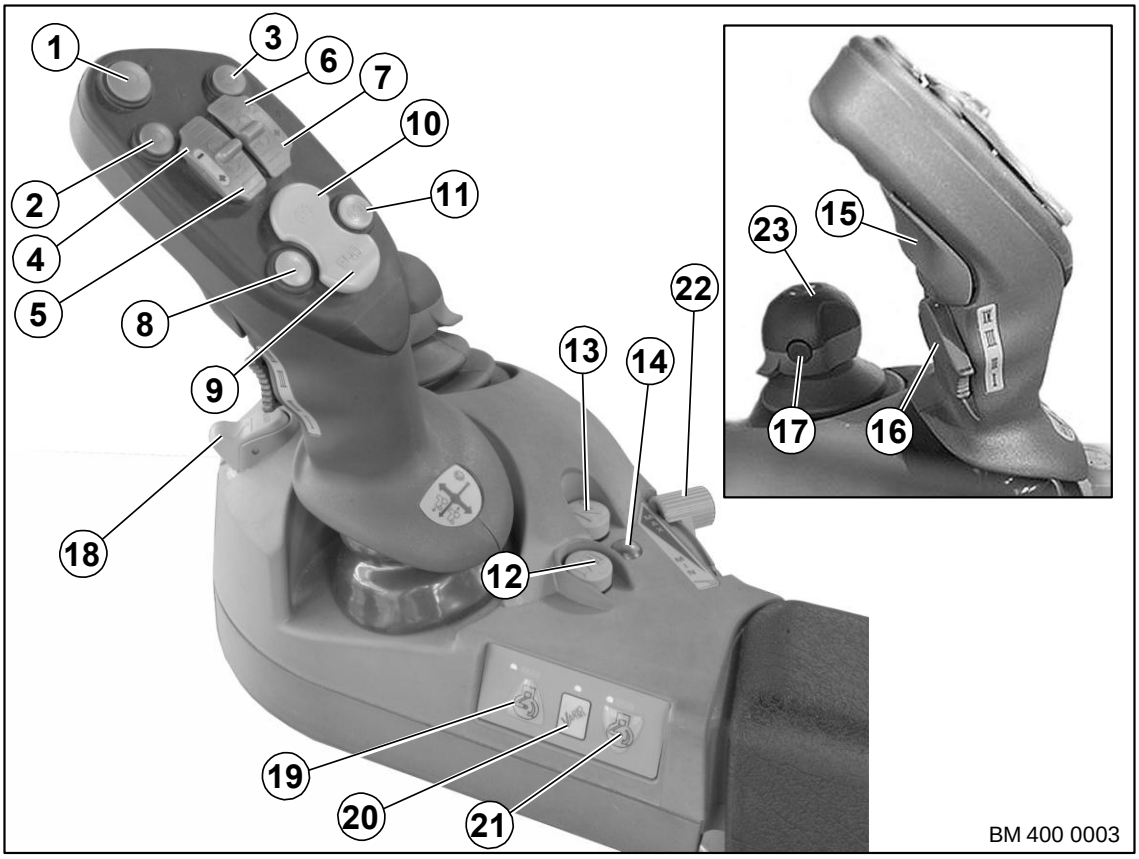


Fig. 61:

1 Switch off all mowing unit drives
2 Retrieve pre-setting "I" cutting height (optional)
3 Retrieve pre-setting "II" cutting height (optional)
4 Lower left mower: with "12" key pressed from transport position to headland position without "12" key from headland position to working position
5 Lift left mower: with "12" key pressed from headland position to transport position without "12" key from working position to headland position
6 Lower right mower: with "12" key pressed from transport position to headland position without "12" key from headland position to working position
7 Lift right mower: with "12" key pressed from headland position to transport position without "12" key from working position to headland position
8 Lift front mower
9 Lift all mowers: Only possible from working position to headland position
10 Lower all mowers: Only possible from headland position to working position

11 Lower front mower
12 Additional function for keys "4 to 7"
13 Switching between semi-automatic and automatic
14 LED lit semi-automatic active
LED not lit automatic active
15 Actuation key for travelling gear
16 Selector switch – acceleration ramp
17 Additional function: Mowing units - release
18 Activation key for Autopilot (optional)
19 In Field mode only: Increase engine speed inching until nominal speed is reached
20 In Field mode only: Switch from nominal speed to idle speed and vice versa
21 In Field mode only: Reduce engine speed inching until idle speed
22 Free
23 Cross switch lever

5.15.1 Multi-function lever (continued)

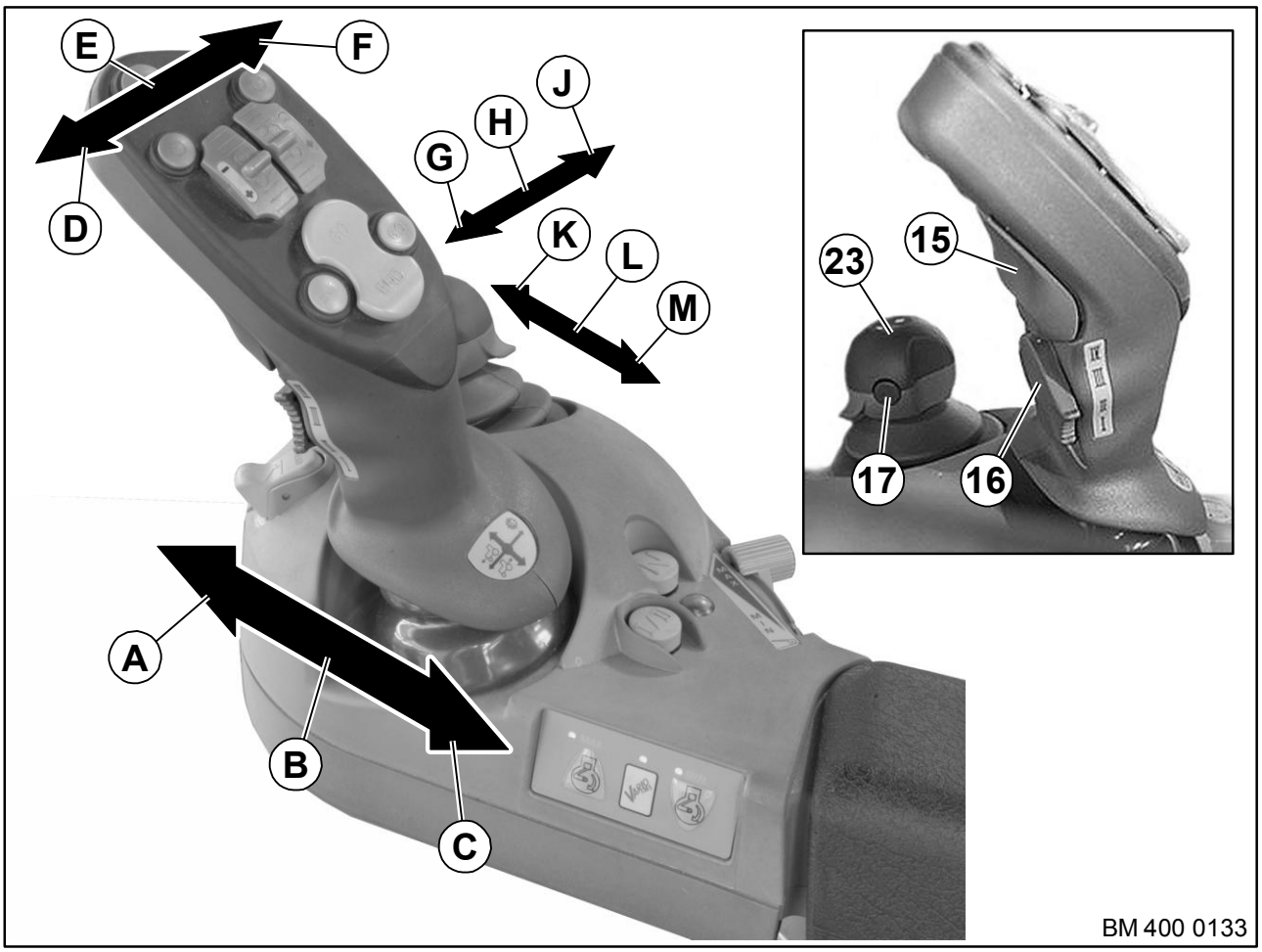


Fig. 62:

A Acceleration (during forward travel)
Deceleration (during reverse travel)
Start travelling gear with activation key pressed (15)

B - Multi-function lever – central position

C - Acceleration (during reverse travel)
Deceleration (during forward travel)
Start travelling gear with activation key pressed (15)

D - Deceleration to 0 km/h
Fast reversing with the activation key (15) pressed (in Field mode only)

E - Multi-function lever – central position

F - Switch on cruise control
Save current speed for cruise control – press activation key (15) and rotate multi-function lever in direction F

G - without key (17) pressed, switch off left mower drive
with key (17) pressed, switch on left mower drive

H - Central position

J - without key (17) pressed, switch off right mower drive
with key (17) pressed, switch on right mower drive

K - without key (17) pressed, switch off front mower drive
with key (17) pressed, switch on front mower drive

L - Central position

M - without key (17) pressed, switch off all mower drives
with key (17) pressed, switch on all mower drives

5.16 Klimatronik / heating

5.16.1 Control and display elements

The Klimatronik is a control unit for air conditioning and heating systems in modern vehicle cabs. The driver's work is made easier through clear, intuitive control of all tasks and optimum climate control in the driver's cab.

Note

If the electrical power supply to the control unit is interrupted, the control unit automatically performs a self test after power is restored. After the self test is complete, the last setting to be saved appears.

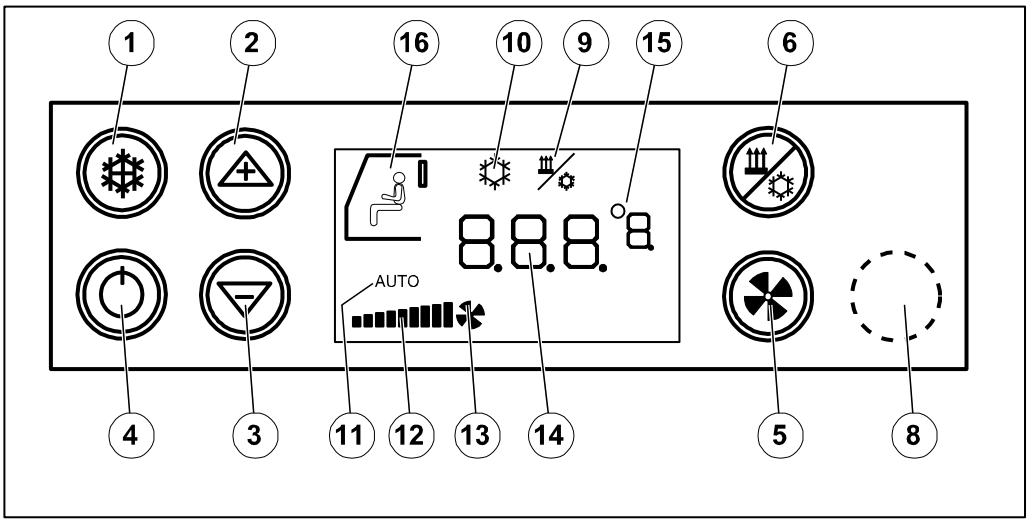


Fig. 63:

Key function key

24 Key to switch air conditioning on and off
25 Key to adjust the desired cab temperature upward.
Alternative: Manual settings "Up"
26 Key to adjust the desired cab temperature downward.
Alternative: Manual settings "Down"
27 Key to switch the controller on and off
28 Key to switch the evaporator fan speed Manual / Automatic
29 Key to switch REHEAT mode on and off (demoisturising the cab air)
30
31 Covered key to switch the temperature display to ° Fahrenheit

LCD function of LCD display

32 Icon indicates REHEAT mode
33 Icon indicates air conditioning
34 Icon indicates fully automatic mode is turned on
35 Bar indicates fan speed in manual mode
36 Icon indicates manual fan mode
37 4-place seven segment display shows setpoint value or error code
38 Icon indicates unit of measure for temperature (°)
39 Indicates the icon for vehicle cab

5.16.2 Operation

5.16.3 Switching on the System

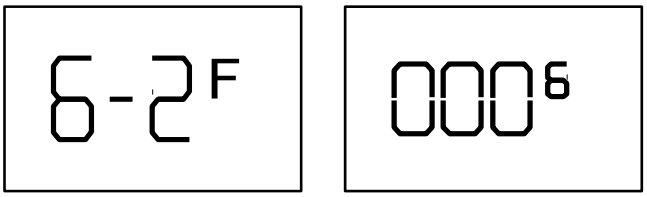


Fig. 64:

Press the key

Note

After the system is switched on, the control unit performs a self test and the software version is displayed for about 5 seconds, for example:

Then the operating hours of the air conditioning system are displayed for 5 seconds (for example 6 operating hours).

Then the last saved setting appears in the display.

5.16.4 Setting the Desired Cab Temperature

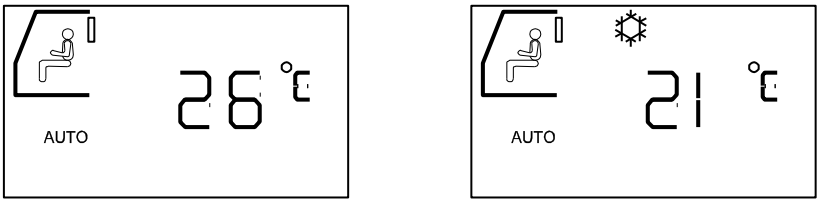


Fig. 65:

The set cab temperature is shown in °C, for example 26°C. The control unit is in Automatic mode.

To lower the desired cab temperature to 21°C, for example, press the key until the desired value appears in the display. (press key 5 x)

5.16.5 Switch air conditioning On / Off

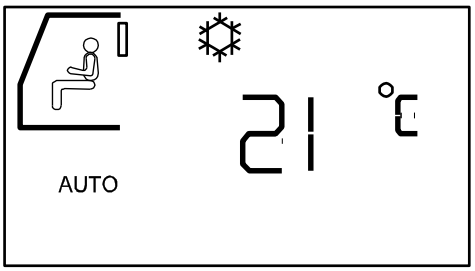


Fig. 66:

You can switch on the air conditioning with the key.

Air conditioning is now turned on; icon indicates air conditioning.

The compressor is turned on by the control unit if necessary.

Pressing the key again turns off air conditioning (compressor is deactivated). The icon disappears.

5.16.6 Switch REHEAT mode On / Off

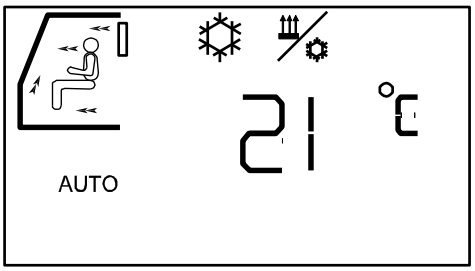


Fig. 67:

REHEAT mode = (demoisturising the cab air)

Switch on REHEAT mode with the key.

The display appears like this:

REHEAT mode is now turned on. The icon indicates REHEAT mode.

Note

The compressor is permanently turned on. The evaporator fan speed is raised to 100%. If necessary, the control unit turns the heating on to keep room temperature at the setpoint value.

REHEAT mode is automatically limited to 10 minutes.

Pressing the key again turns off REHEAT mode.

The icon no longer appears.

5.16.7 Manual setting of evaporator fan speed

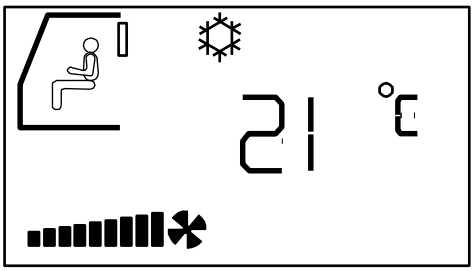


Fig. 68:

Switch on manual evaporator fan speed with the key.

The manual setting for fan speed is now active. The currently set fan speed appears in bar display ▪▪▪▪▪▪▪▪ (full bar display = 100%). The **AUTO** icon no longer appears.

Fan flashes for 5 seconds. During this time the fan speed can be increased with the key or lowered with the key in increments of 10%.

Note

The lowest fan speed that can be set is 30% (three bars are displayed).

Pressing the key twice reactivates AUTO mode. The **Auto icon appears** ; the▪▪▪▪▪▪▪▪ and icons are no longer displayed.

5.16.8 Switching the Temperature Display to ° Fahrenheit

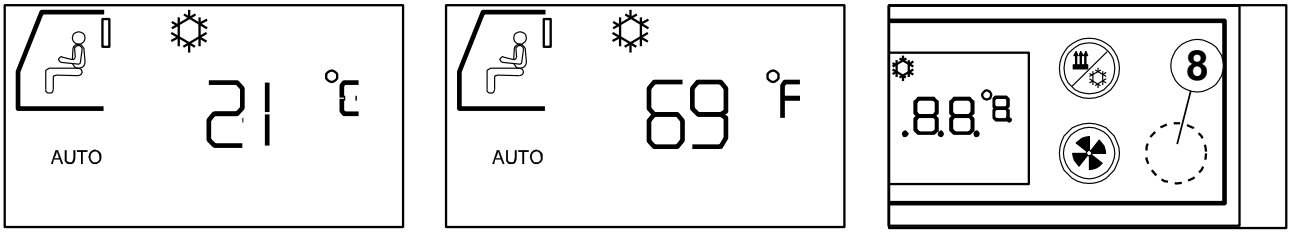


Fig. 69:

The current set-point temperature is shown in ° Celsius.

Press and hold the covered key (8) and press the key as well. The display switches to ° Fahrenheit.

The current set-point temperature is shown in ° Fahrenheit.

Pressing the (8) key and key again switches the display back to ° Celsius.

5.16.9 Showing Faults in the Display

Error code (F0)´

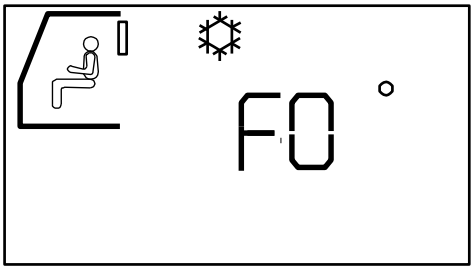


Fig. 70:

Error in room temperature sensor is indicated by flashing indicator (**F0**).

Note

The control unit has recorded an error in the room temperature sensor. Controller is no longer ready for operation.

Cause of sensor fault:

Short circuit or interruption in sensor line, plug connection on the sensor or control unit , temperature sensor defective. The controller will not be ready for operation again until the error is eliminated. Then the sensor fault no longer appears.

Note

If a sensor fault occurs, the controller continues working with the setting that was valid before the fault was recorded.

Error code (FI)

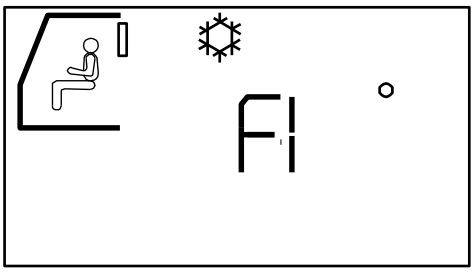


Fig. 71:

Error in blow-out temperature sensor is indicated by flashing indicator (F1).

Note

The control unit has recorded an error in the blow-out temperature sensor. The

control is no longer ready for operation.

Cause of sensor fault:

Short circuit or interruption in sensor line, plug connection on the sensor or control unit , temperature sensor defective. The controller will not be ready for operation again until the error is eliminated. Then the sensor fault no longer appears.

Note

If a sensor fault occurs, the controller continues working with the setting that was valid before the fault was recorded.

5.17 Adjustable air jets

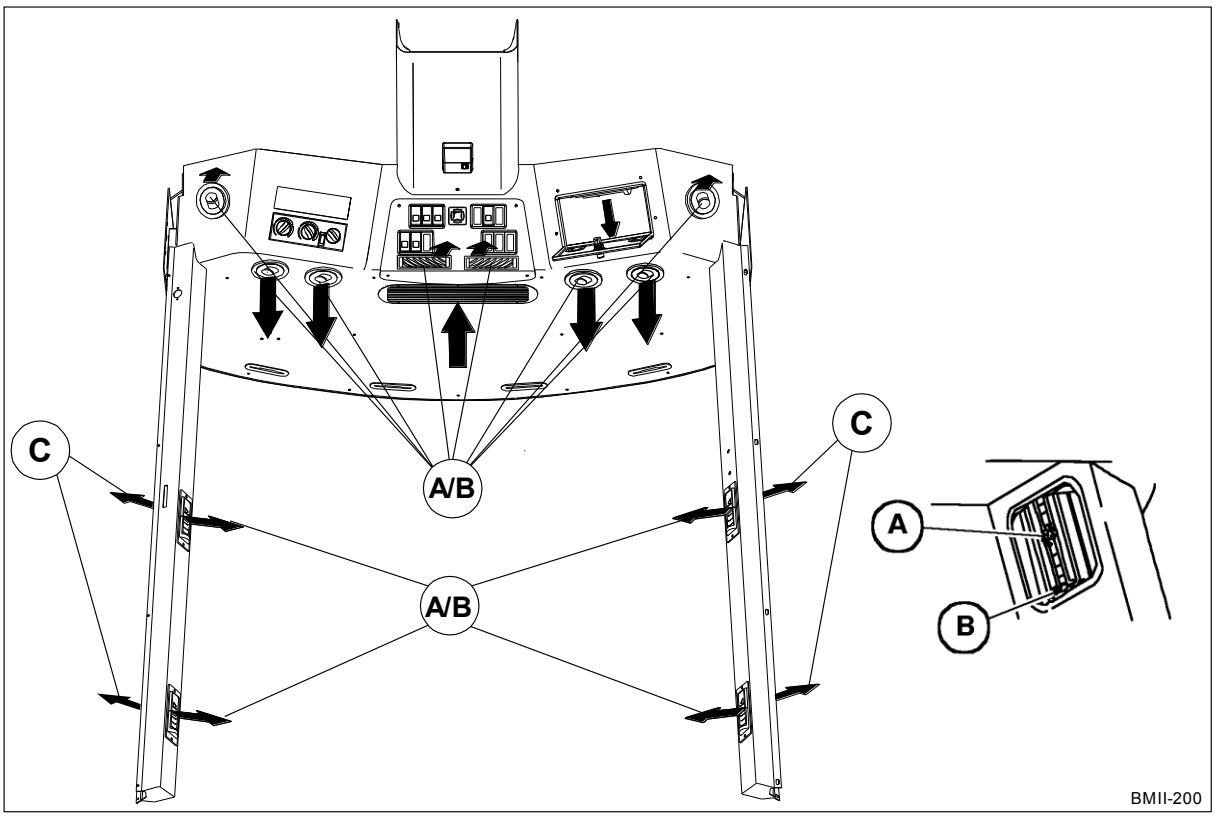


Fig. 72:

A Knurled wheel to control the amount of air
B Adjustment of the louvers
C Air slots

Note

Set the louvers in such a way that the panes do not mist up.

5.18 Radio

Fig. 73:

1 ISO compartment for radio

Note

Telephones and radio equipment not connected to the outside antenna may lead to functional troubles in the vehicle's electronic system, thus jeopardising the operational safety of the vehicle.

6 Info centre "EasyTouch"

6.1.1 Overview

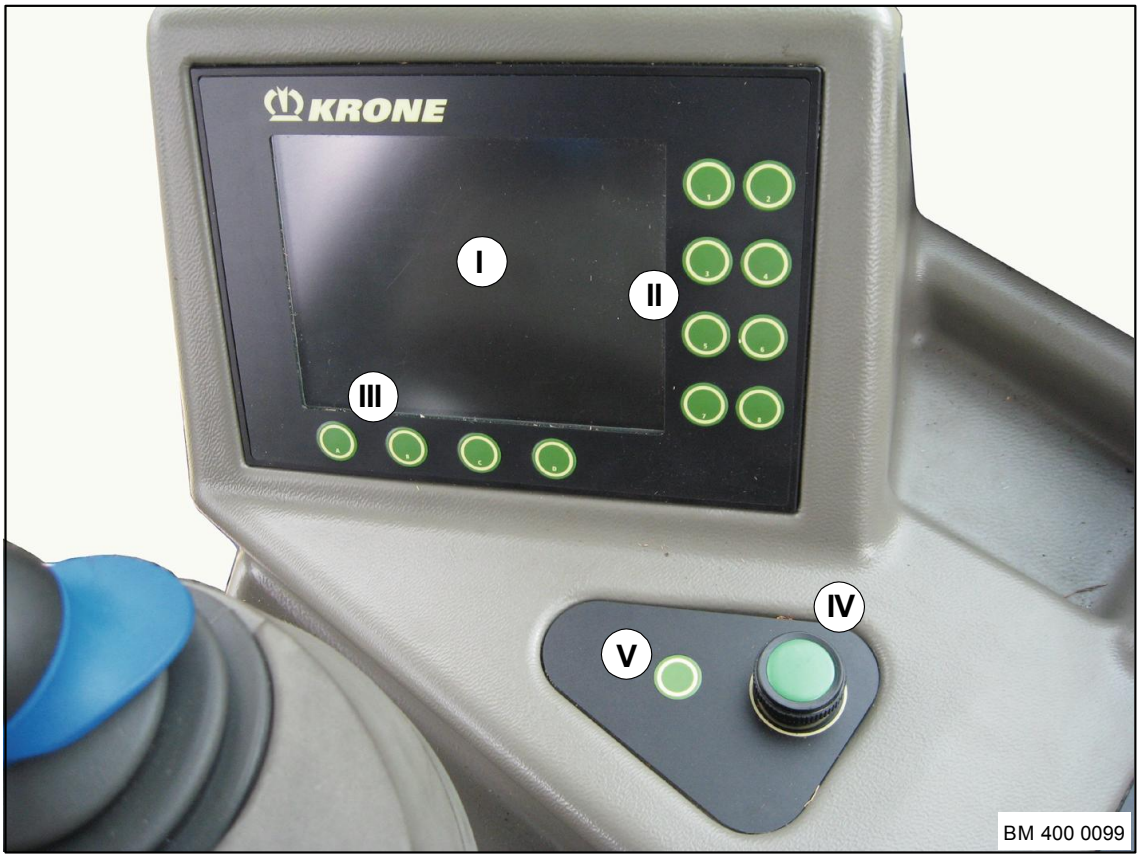
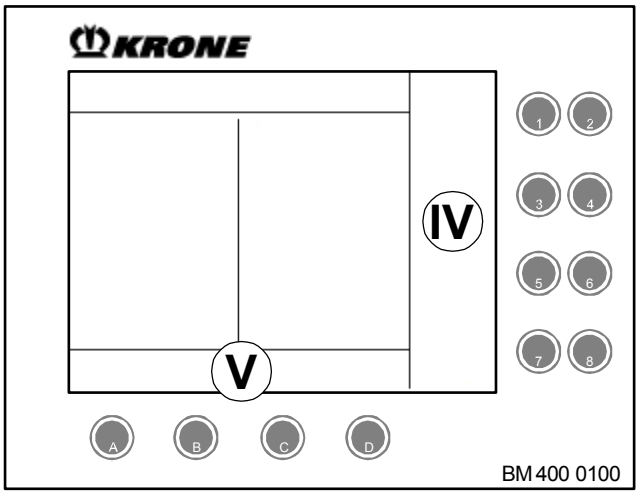


Fig. 74:

- I = Display
- II = Keys 1 to 8 (1 - 8)
- III = Keys A to D (A - D)
- IV = Rotary potentiometer
- V = Menu key



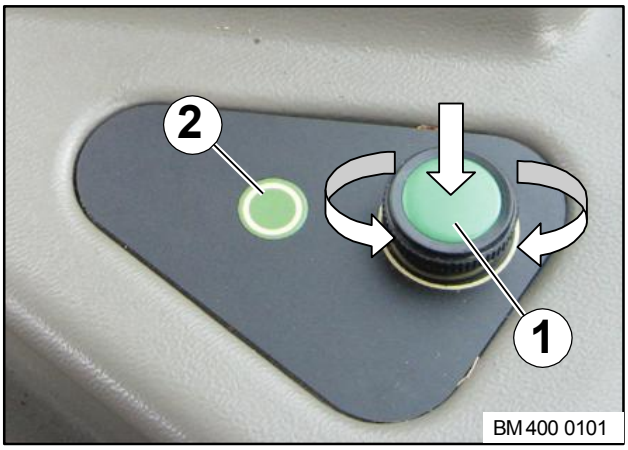


Fig. 75:

The Info Centre informs you about the current actions and the current operating condition of the machine. You can use the Info Centre to make settings for the machine and start or stop actions. Its main components are:

Keys 1-8

Keys 1-8 are used to activate the softkeys located in the right column (IV). For the assignment of the keys, see the illustration. If there is no softkey next to the key, it has no function.

Keys A-D

The keys A-D are used to activate the softkeys located in the line just above them (V). For the assignment of the keys, see the illustration. If there is no softkey above the key it has no function.

Rotary potentiometer (1)

The rotary potentiometer has two functions:

2 The rotary potentiometer can be turned to change settings and to select the desired menu in the menu level.

3 Pressing the rotary potentiometer activates and saves the settings.

Menu key (2)

You can use the key with the rotary potentiometer to call or close the menu level or to go to the preceding menu level. Holding the key down slightly longer takes you back to the basic screen.

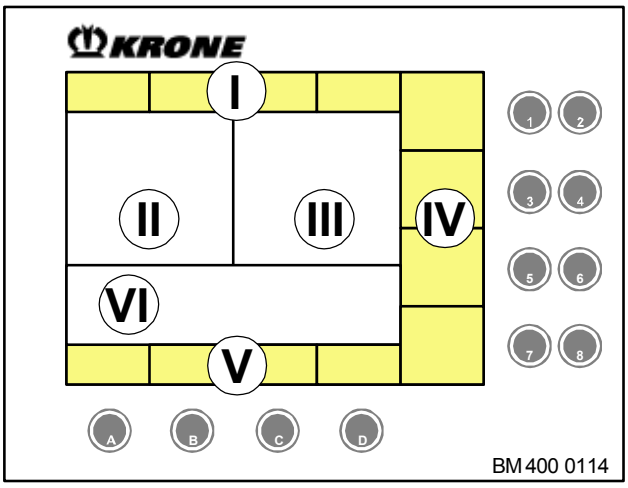


Fig. 76:

Display (screen display)

The display is divided up into the following sections:

Status line (I):

- Time, number of errors, status display of mowing units

Information section:

- Engine information (II)
- Travelling gear information (III)
- Settings (IV and V)
- Drive information (VI) (only in Field mode basic screen)

6.2 Information section

Basic screen - road travel

Field mode basic screen

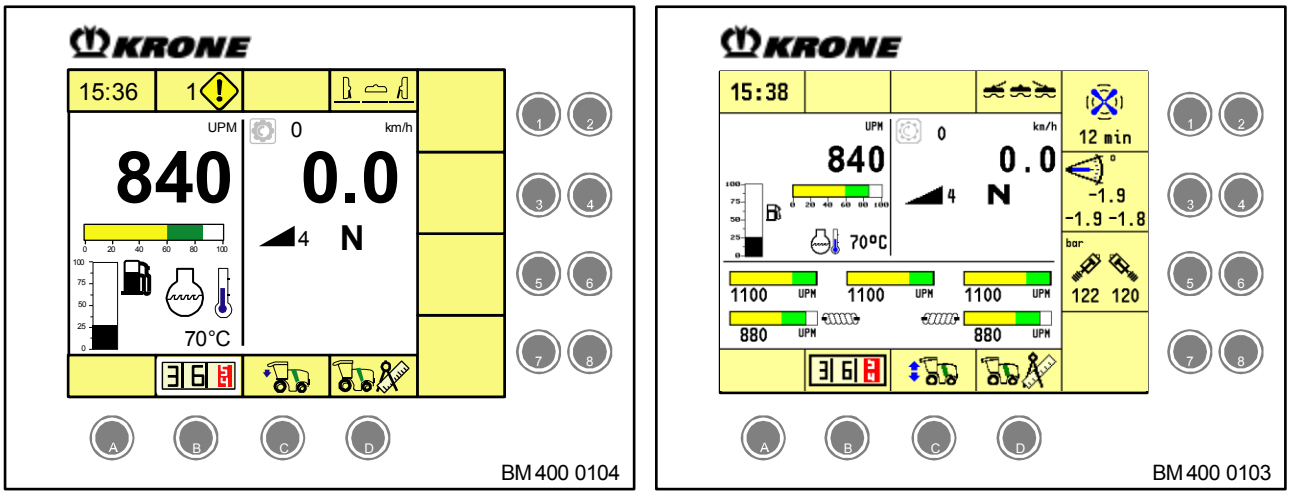


Fig. 77:

After the ignition is switched on, depending on the position of the "Road / field" release switch, the basic screen "Road travel" or "Field mode" appears in the display.

6.2.1 Status line (I)

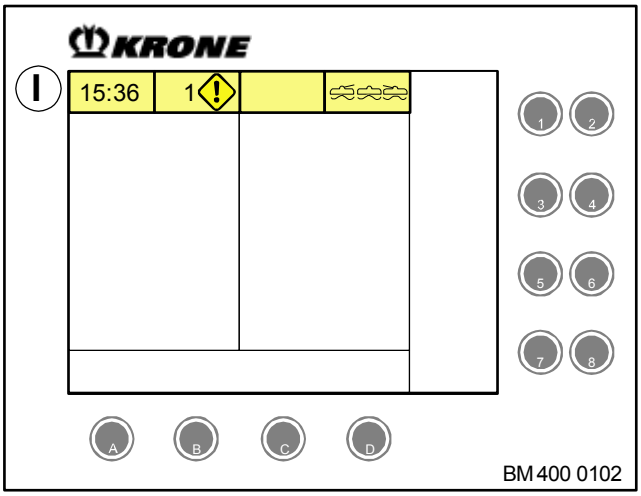


Fig. 78:

= Error – at least one error occurred. The number of errors present appears before the icon.

= Central lubrication (lit briefly when switching from Road basic screen to Field basic screen).

	Lateral mowing unit left		Front mowing unit		Lateral mowing unit right	
	Drive off	drive on	Drive off	drive on	Drive off	drive on
Headland Position						
Working position						
Folded up						

6.2.2 Motor data (II) information section

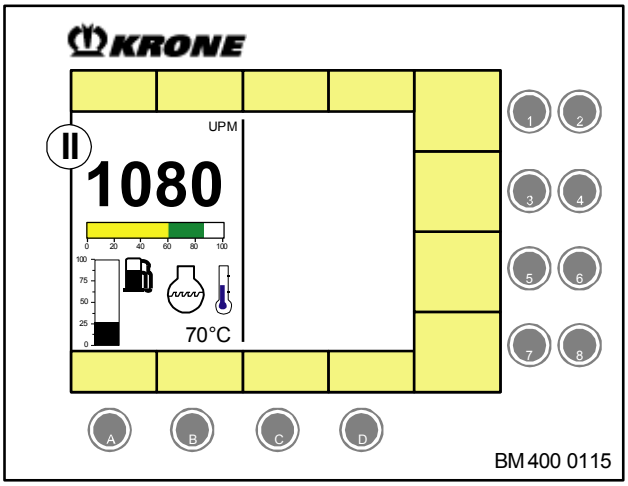


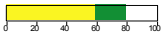
Fig. 79:

1080

Engine speed

Road mode: 850 - 1750 rpm

Field mode: 850 - 1900 rpm



Engine capacity as %

Cooling water temperature display If the cooling water temperature reaches the critical range, the background of the cooling water temperature display changes to red.

Fuel gauge

6.2.3 Information section of the travelling gear data (III)

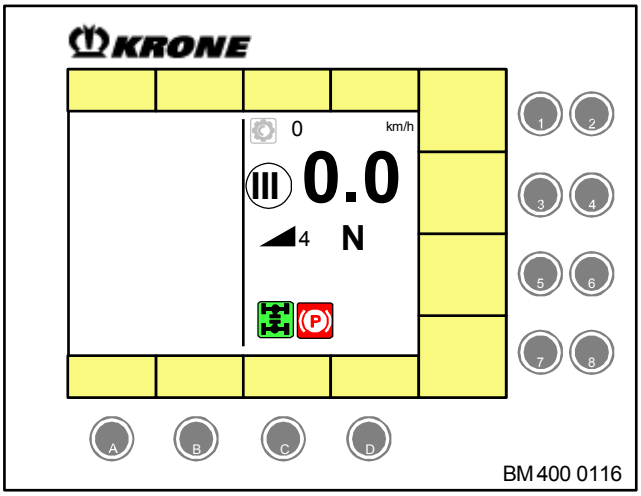


Fig. 80:

Cruise control active; the number after the icon is the saved speed for Tempomat operation in km/h.	Cruise control inactive

Travelling speed

Road mode: 0 - 40 km/h	Field mode: 0 - 19 km/h

Acceleration ramp

1 = Lowest acceleration ramp	2 = ...	3 = ...	= Highest acceleration ramp

Direction of travel

= Forward travel	N = Neutral (stopped)	= Reverse travel

Type of drive

Axle sep. active (only possible in Field mode)	Parking brake is applied	Emergency mode; allows the driver to drive the vehicle out of the danger zone even if there are serious drive problems.

6.2.4 Information section of settings (IV and V)

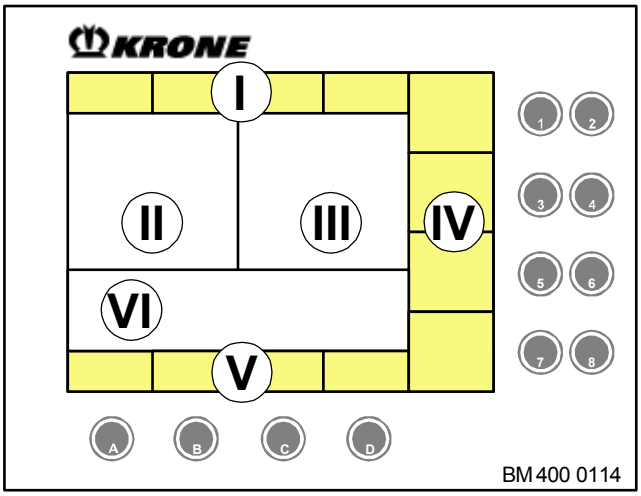


Fig. 81:

(see Chapter "Settings").

6.2.5 Drive data information section (VI)

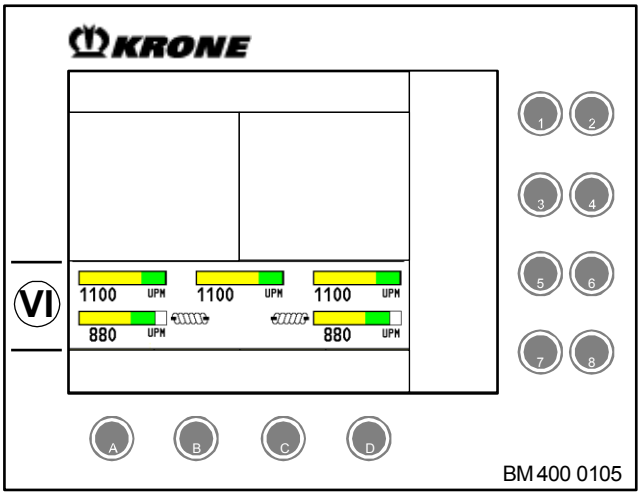


Fig. 82:

Drive information appears only in the "Field mode" basic screen.

1100 UPM Speed of drive left	1100 UPM Speed of drive front	1100 UPM Speed of drive right
880 UPM Speed auger left		880 UPM Speed auger right

6.3 Quick Access Keys in the Basic Screen

The quick access keys can be used to perform functions directly from the basic screen or to bring up the appropriate submenu.

6.3.1 Quick access "Reverse ventilation"

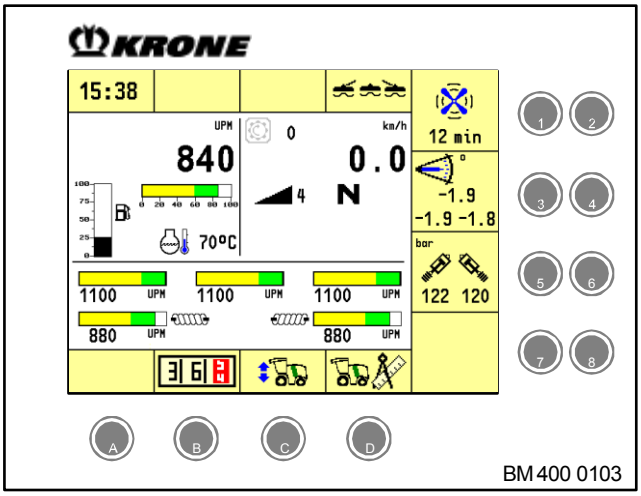


Fig. 83:

Appears only in basic screen "Field mode"

- Activating the 1 or 2 key starts the reversing fan.

The icon "Reversing fan inactive" disappears. The icon "Reversing fan active" appears.

The compressor is turned on and the cleaning time begins. After cleaning is complete, the icon "Reversing fan active" disappears.

The "Pause time" icon appears. After the pause time has expired, the icon "Pause time" disappears and the icon "Reversing fan inactive" appears.

Then the process can be restarted if necessary.

6.3.2 Quick access "Hydraulically adjustable cutting height" (optional)

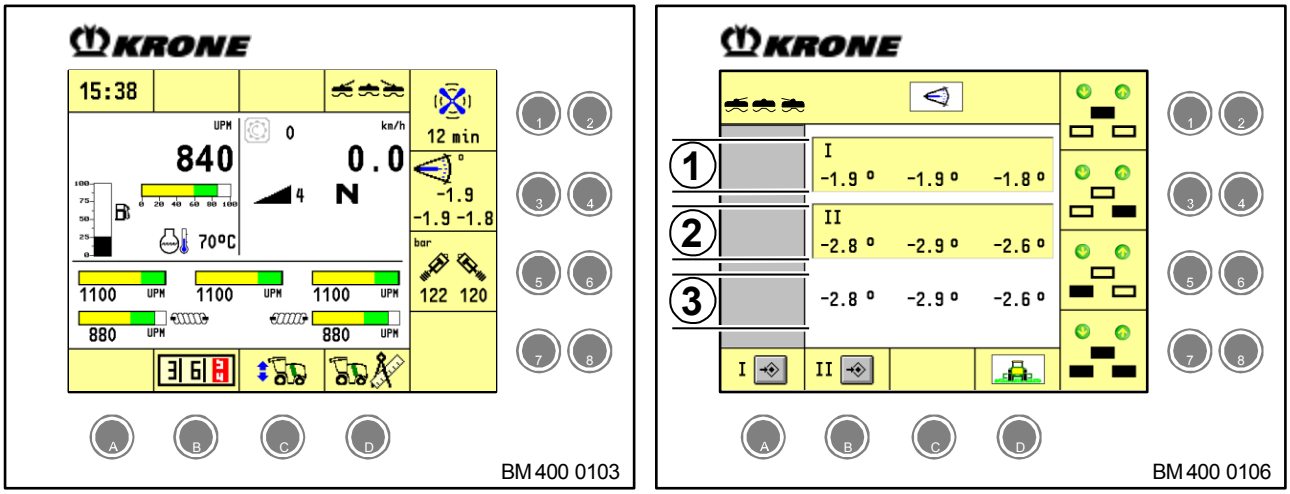


Fig. 84:

Appears only in basic screen "Field mode".

- Activating the 3 or 4 key brings up hydraulically adjustable cutting height.

Submenu "Hydraulically adjustable cutting height" appears.

4. = saved values of pre-setting I
5. = saved values of pre-setting II
6. = current values of cutting height

You can use the A and B keys to save pre-settings for cutting height.

I = Save pre-setting for Cutting height I

II = Save pre-setting II cutting height

Activating keys 1-8 sets the inclination of the mowing units.

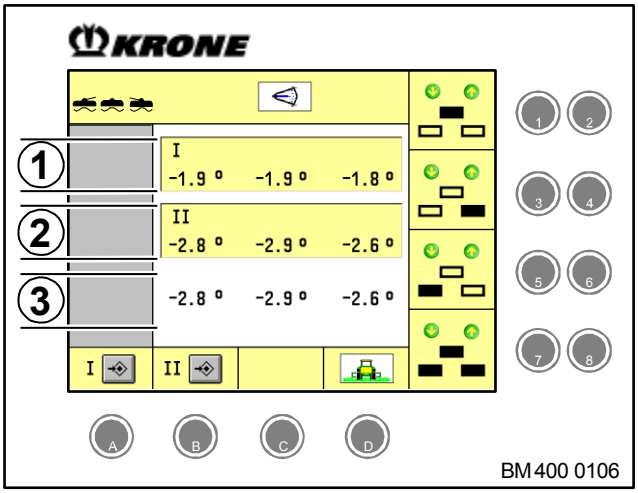


Fig. 85:

Inclination	Mowing units lateral left	Front mowing unit	Mowing units lateral right	Mowing unit all
reduce	Key 5	Key 1	Key 3	Key 7
increase	Key 6	Key 2	Key 4	Key 8

Note

If All Mowing Units is selected, the inclination for the front mowing unit is set first. Then the lateral mowing units are automatically adjusted to the value of the front mowing unit.

- Activating the D key brings up the basic screen.
- Pressing the key on the rotary potentiometer takes you one menu level back.

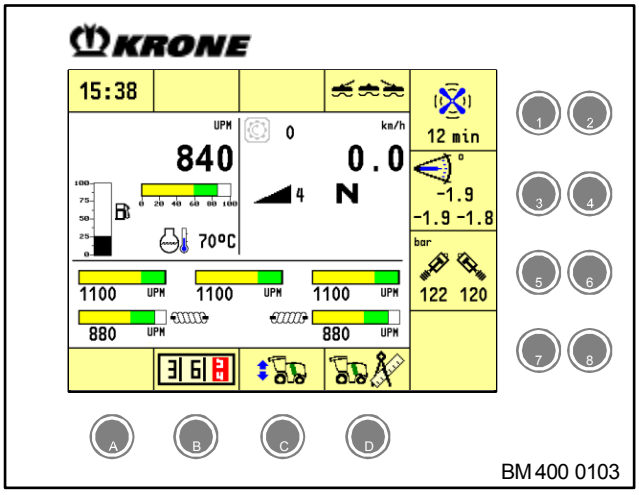
6.3.3 Quick access "Hydraulically adjustable lateral spring compensation" (ground pressure) (optional)

Appears only in basic screen "Field mode"

Lateral spring compensation can be used to adjust the ground pressure of the lateral mowing units to local conditions. In order to protect the sward, the load on the lateral mowing units must be relieved so that they do not jump when mowing, yet do not leave any brush marks on the ground.

Note

To set the pressure, lower both lateral mowing units to the ground and set the front axle to working position.



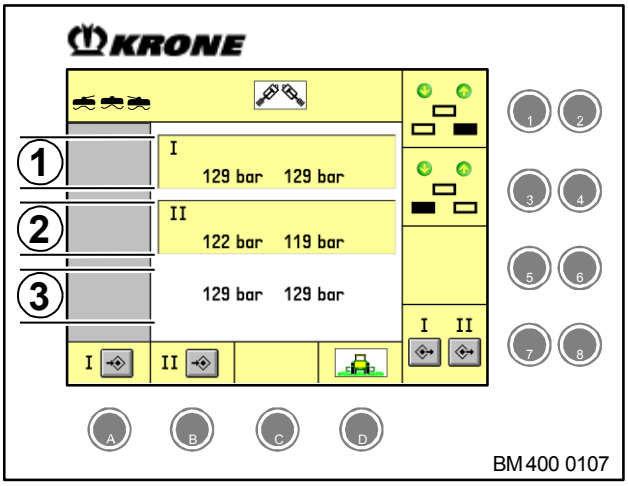


Fig. 86:

- Pressing the 5 or 6 key brings up hydraulically adjustable lateral spring compensation.

Submenu "Hydraulically adjustable lateral spring compensation" appears.

(1) = saved values of pre-setting I
(2) = saved values of pre-setting II
(3) = current values of spring compensation

You can use the A and B keys to save pre-settings (I and II) for hydraulically adjustable lateral spring compensation (ground pressure).

I = Save pre-setting I

II = Save pre-setting II

- Activating the 7 key for brings up pre-setting (I).
- Activating the 8 key for brings up pre-setting (II).

Note

Different lateral mower weights for mowing units with roller conditioner and swath grouping (BSS) Effect: Different group pressure.

With option "Mowing units with roller conditioner and swath grouping", the weight of the right mowing unit is greater than the weight of the left mowing unit. This is caused by the movement of the drive. Accordingly the compensation pressure must be set about 5 bar higher for the right mowing unit.

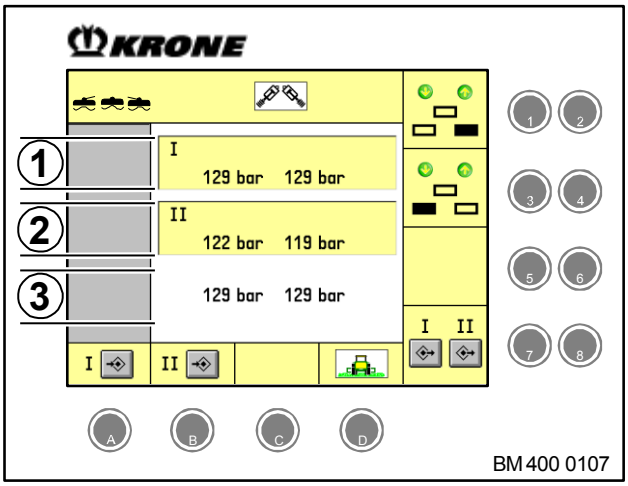


Fig. 87:

Activating keys 1-4 increases or reduces the pressure of the lateral mowing units.

Pressure	Mowing units lateral left	Mowing units lateral right
reduce	Key 3	Key 1
increase	Key 4	Key 2

High compensation pressure = lower ground pressure

Lower compensation pressure = higher ground pressure

6.3.4 Quick access "Customer Data Counter"

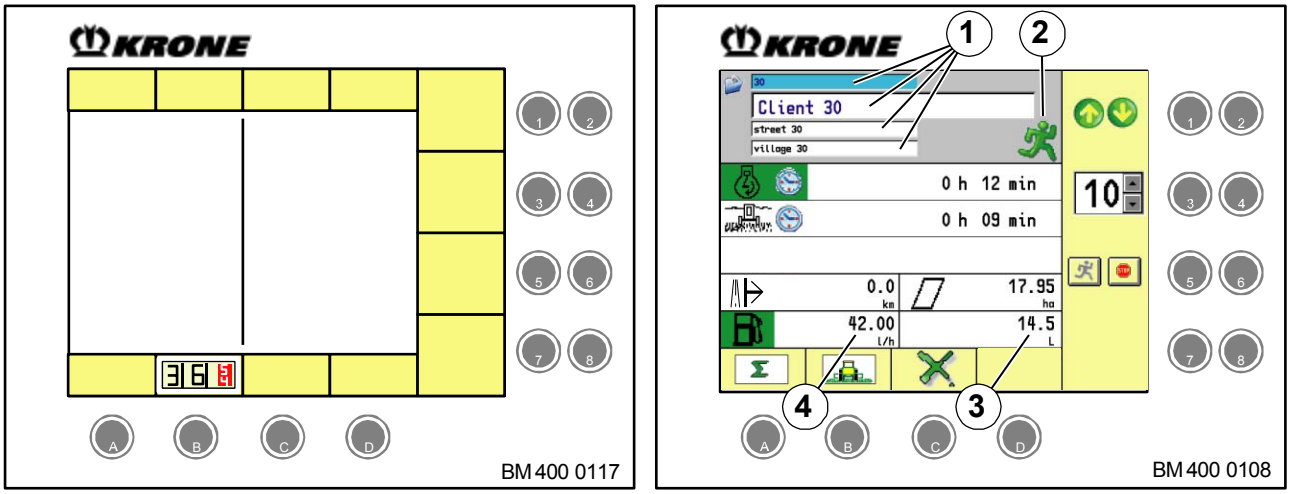


Fig. 88:

Appears in basic screen "Road mode and field mode"

- Activating the B under softkey 3 6 E brings up the customer counter.

Customer record (1)

Status display (2)

STOP Counter stopped

A counter is activated

10 Freely usable numeric input field (for the example to assign several different cultivated areas to the customer record)

Counter (active counters are highlighted colour)

= operating hour counter (h)

= working hours counter (h)

= surface counter (ha)

= road odometer (km)

= fuel consumption (l)

- (3)= absolute fuel consumption
- (4)= current average consumption (l/h)

6.3.5 Changing a customer record (1) or creating a new one

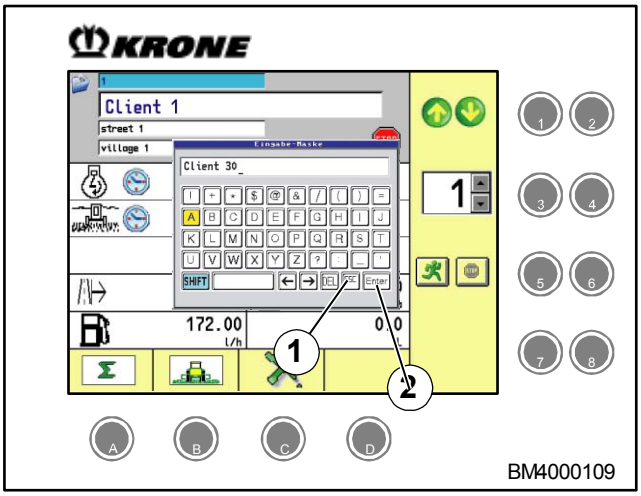


Fig. 89:

A total of 30 customer records can be created. Select the customer record you want to modify; select a free customer record to create a new entry with the 1 and 2 keys.

- You can use the rotary potentiometer to select the desired setting. The entry box is highlighted in colour.
- Pressing the rotary potentiometer opens an alphanumeric input field.
- You can change the customer record or enter a new one with the rotary potentiometer. (To accept the desired alphanumeric value, press the rotary potentiometer.)

Note

Selecting the "ESC" symbol (1) and confirming causes the program to exit the input field without saving the entries or changes. Selecting the "Enter" symbol (2) and confirming causes the program to accept and save the entry or change.

- Pressing the key on the rotary potentiometer also takes you one menu level back

6.3.5.1 Switching the counter on or off

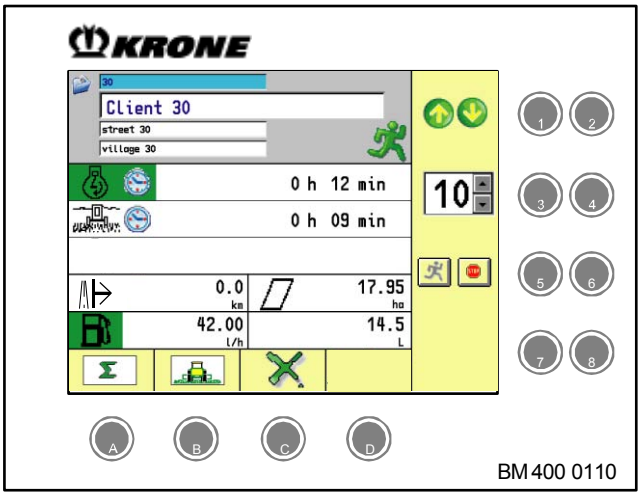


Fig. 90:

- Use the 5 and 6 keys to turn the counter on and off STOP.
- Activating the B key brings up the basic screen.
- Pressing the key on the rotary potentiometer takes you one menu level back.

6.3.5.2 Deleting the customer counter

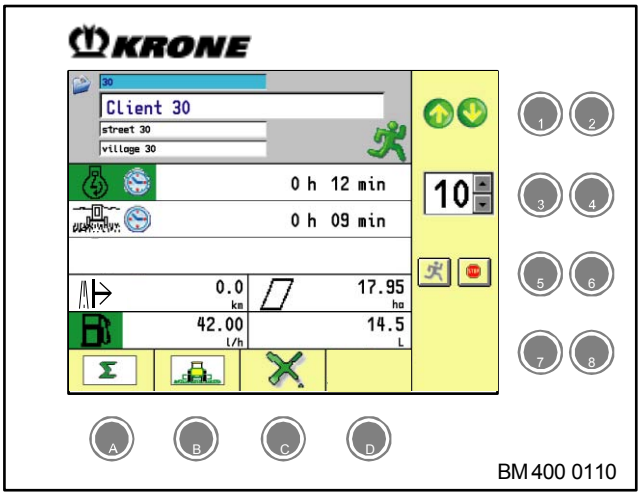


Fig. 91:

Pressing the C key under the softkey deletes the counters of the selected area 10 in the selected customer record (in the example shown here, the tenth area).

Note

Repeat deletion of the counters for each previously created cultivated area as necessary.

6.3.5.3 Switching to General Counters (Machine Data Counters)

- Pressing the A key under the softkey brings up the "Counters and machine data" menu.

For more information see Section "Counters and Machine Data"

6.3.6 Quick access "Hydraulic axle suspension"

6.3.6.1 From the "Road travel" basic screen

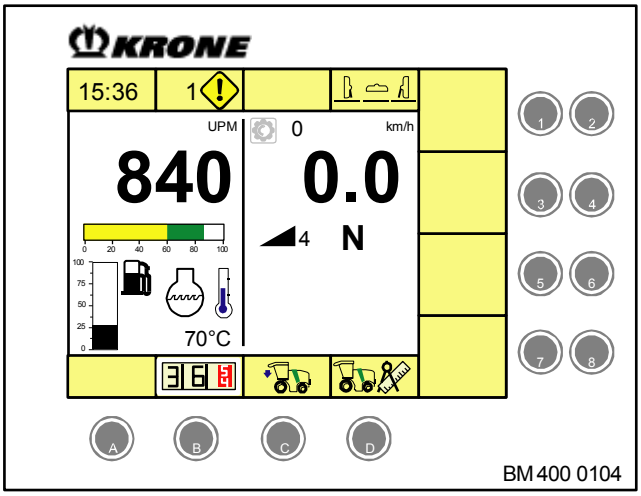


Fig. 92:

When travelling on public roads, the front axle must be lowered to reach a transport height of max. 4 m.

- Activating the C key lowers axle suspension with inching.

6.3.6.2 From the "Field mode" basic screen

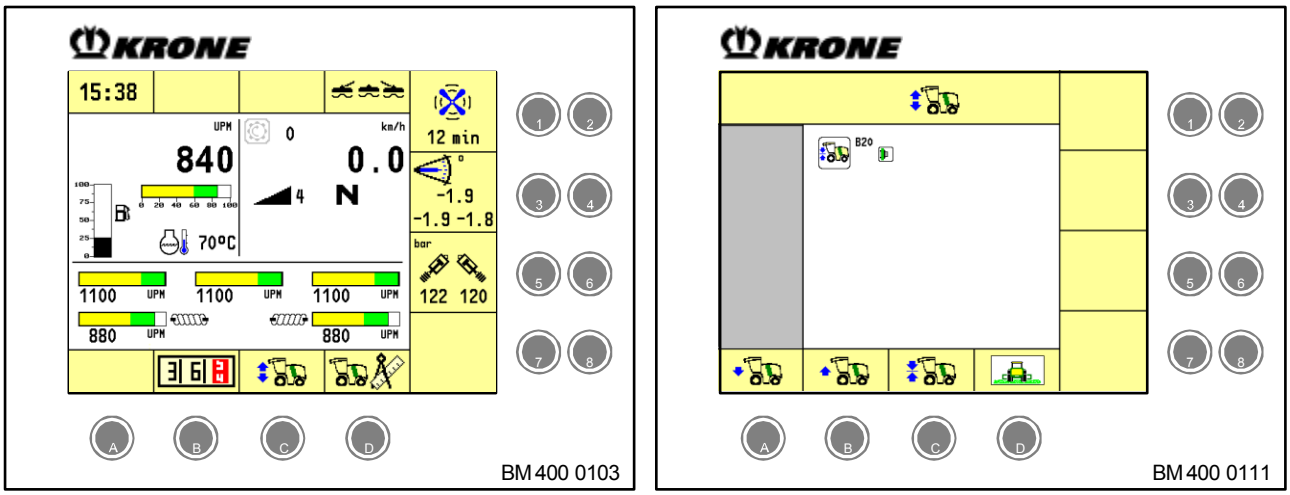


Fig. 93:

- Activating the C key brings up the "Hydraulic axle suspension" submenu.

The "Hydraulic axle suspension" menu appears.

- Activating the A key for lowering axle suspension. (inching)
- Activating the B key for lifting axle suspension. (inching)
- Activating the C key for move to mowing position. (inching)
- = Sensor B20 axle suspension
  - = Sensor alive (axle suspension is located under the working position)
  - = Sensor not alive axle suspension is located over the working position
  - Activating the D key brings up the basic screen.
  - Pressing the key on the rotary potentiometer takes you one menu level back.

6.3.7 Quick access "Machine settings"

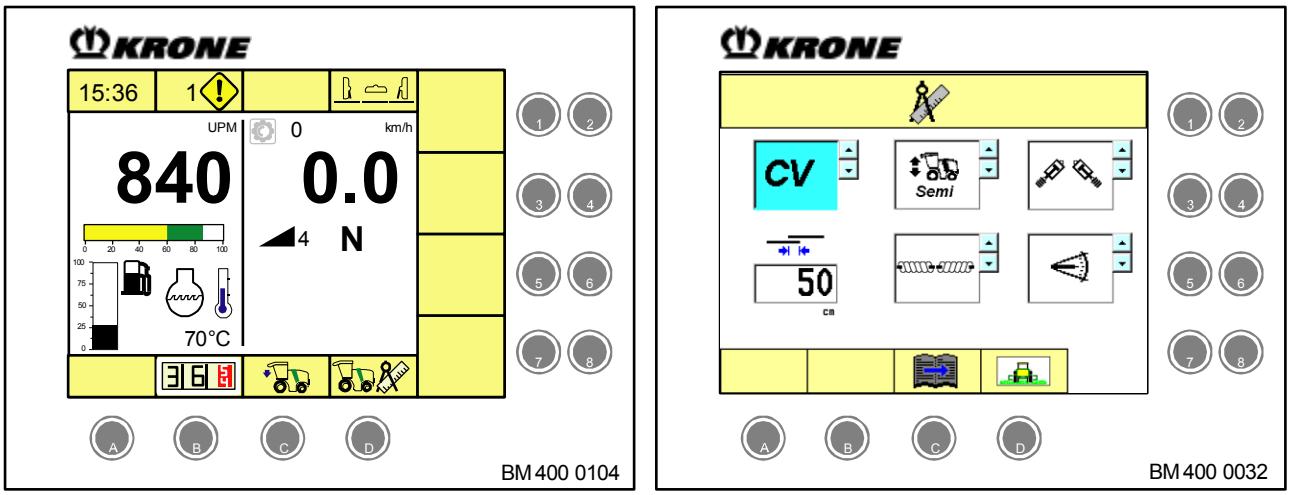


Fig. 94:

Appears in basic screen "Road mode and field mode"

- Activating the D key brings up menu level "Machine setting".

The "Machine settings" menu appears.

Note

For more information, see chapter "Machine settings"

6.4 Menu Level

6.4.1 Short overview

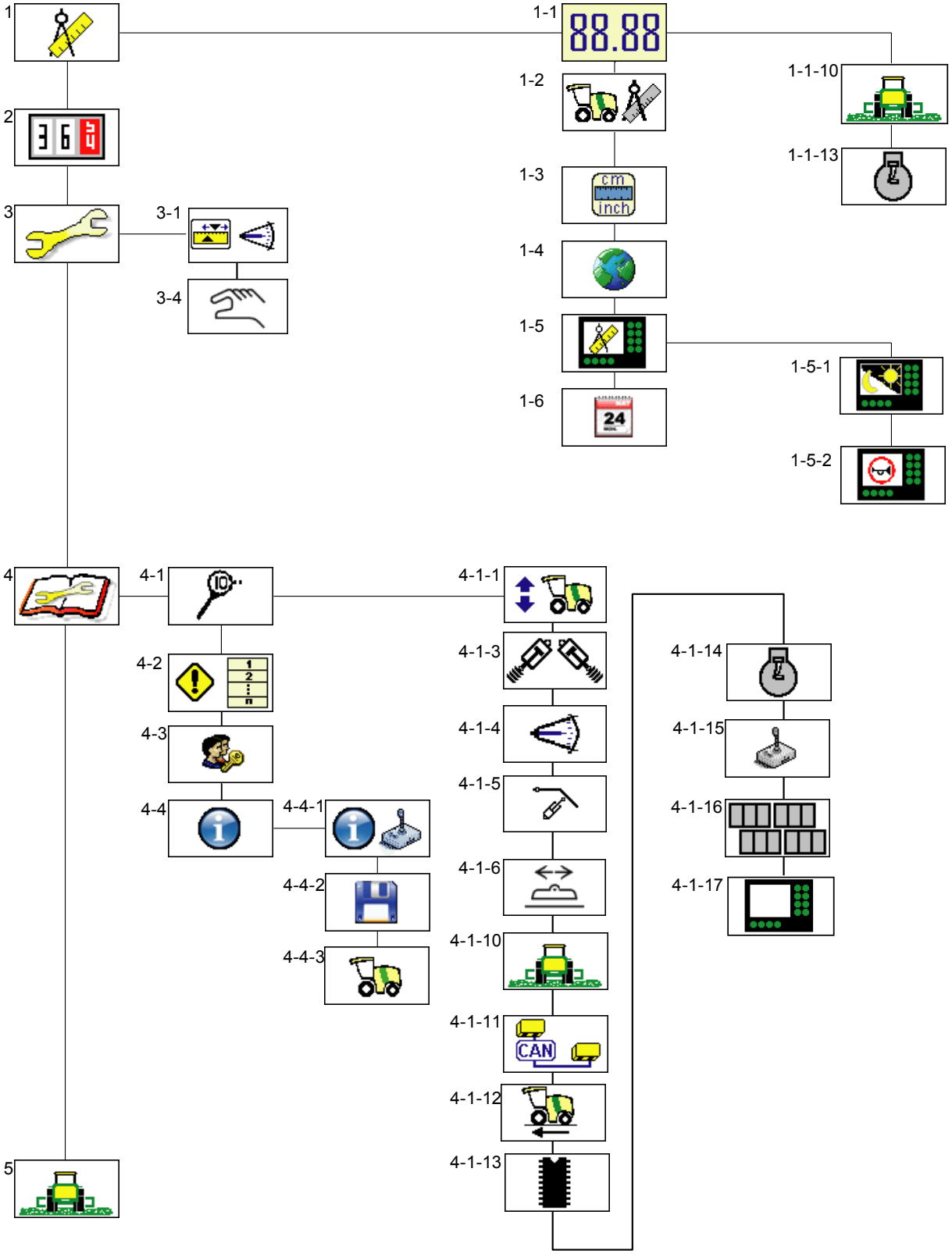


Fig. 95:

6.4.2 Bringing up a Menu Level

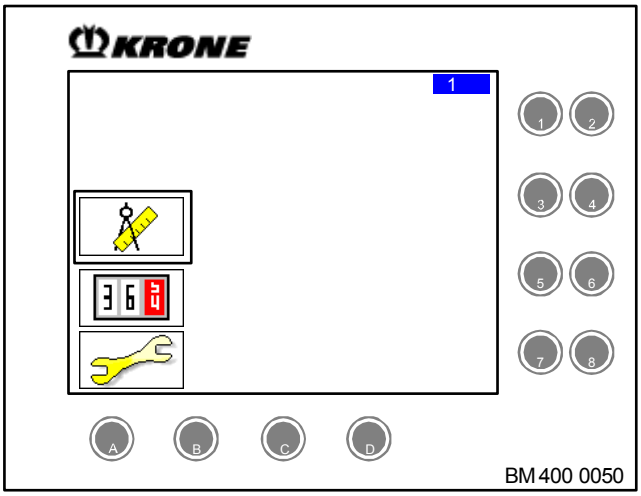
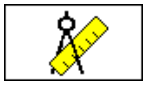


Fig. 96:

• You can bring up a menu level with the key on the rotary potentiometer.
The display indicates the menu level.

The menu level is divided into five main menus:

 = Main menu 1 "Settings"

= Main menu 2 "Counters"

= Main menu 3 "Maintenance"

= Main menu 4 "Service"

= Main menu 5 "Basic screen"

• You can close the menu level that was called with on the rotary potentiometer.

Main Menu 1 "Settings"

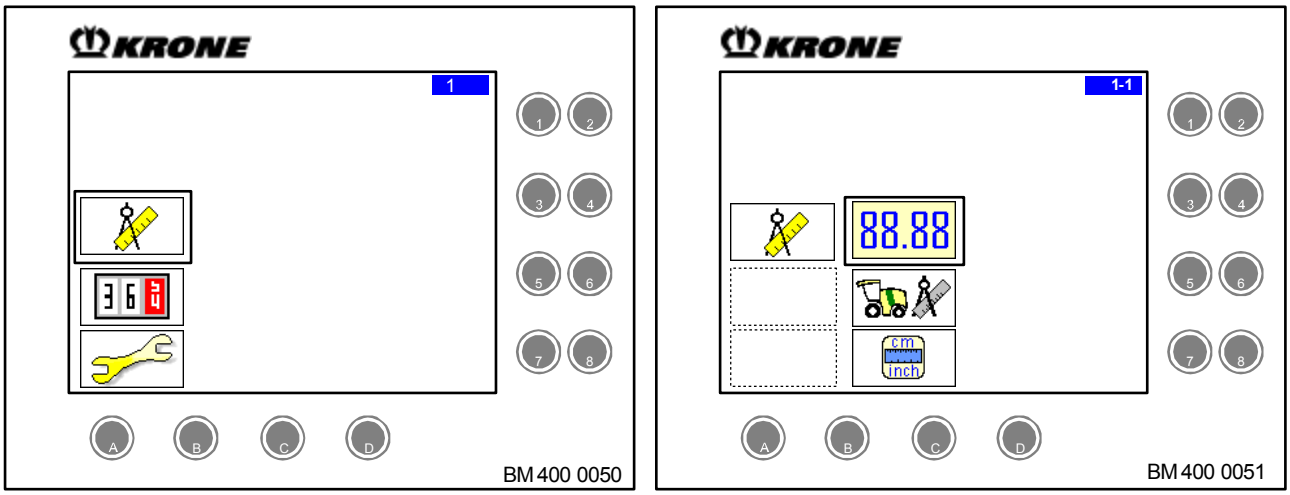


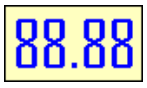
Fig. 97:

The main menu level is active.

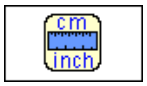
- Select main menu 1 with the rotary potentiometer.
- Press the rotary potentiometer.

The display shows menu level 1 "Settings".

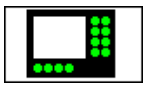
The main menu, "Settings", is divided up into six menus:

 = Menu 1-1 "Parameters"

= Menu 1-2 "Machine setting"

 = Menu 1-3 "Units"

= Menu 1-4 "Language"

 = Menu 1-5 "Display"

= Menu 1-6 "Date/time"

- Pressing the key on the rotary potentiometer takes you one menu level back.

6.5 Menu 1-1 "Parameters"

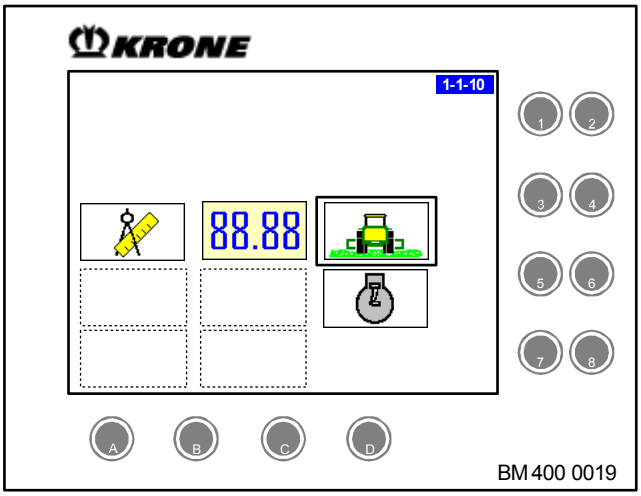


Fig. 98:

Main menu 1 "Settings" appears:

- Select menu 1-1 "Parameters" with the rotary potentiometer.
- Press the rotary potentiometer.

The display indicates the menu level "Parameters".

The "Parameter" menu is divided into two sub-menus:

= Menu 1-1-10 "Work parameters"

= Menu 1-1-13 "Diesel engine parameters"

- You can use the rotary potentiometer to select the desired menu.

Pressing the rotary potentiometer causes the parameters of the selected menu to be displayed

or

- Pressing the key on the rotary potentiometer takes you one menu level back.

6.5.1 Entering parameters

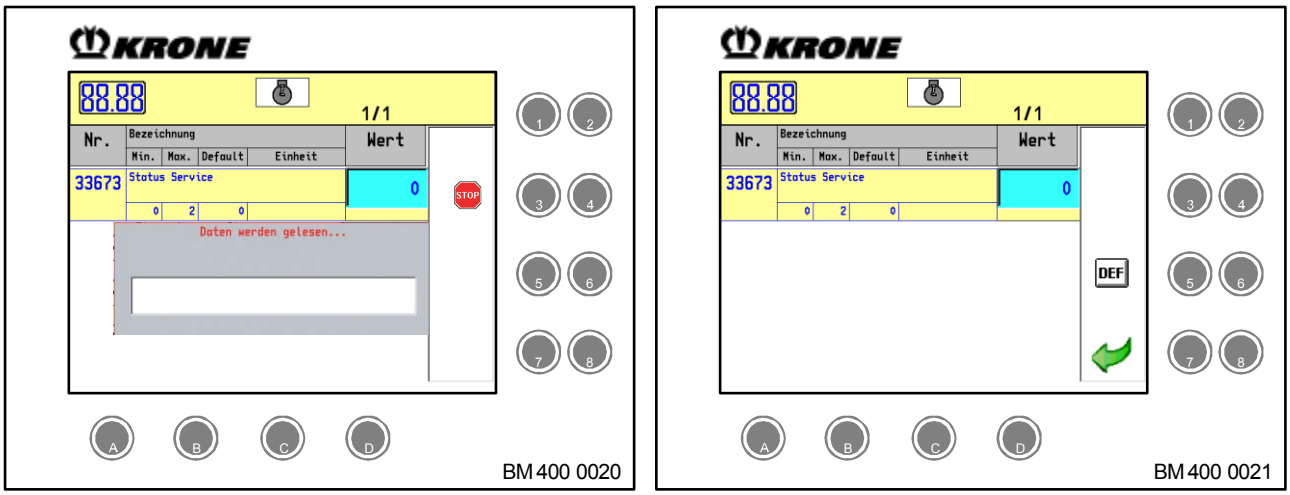


Fig. 99:

Note

As long as data is being read, the current process can be stopped by pressing the 3 key next to softkey STOP.

- Pressing the rotary potentiometer allows you to jump to the input field.
- You can use the rotary potentiometer to set the desired value.
- When you press the rotary potentiometer, you exit the input field and the value that was entered is applied.

Note

To apply the default setting values, press the 5 key next to the DEF softkey.

- To jump back to the screen that was previously displayed, press the 7 key next to the softkey.
- Pressing the key on the rotary potentiometer takes you one menu level back.

Note

For additional information on the individual parameters, please refer to the parameter list in appendix "Parameter List".

6.6 Menu 1-2 "Machine setting"

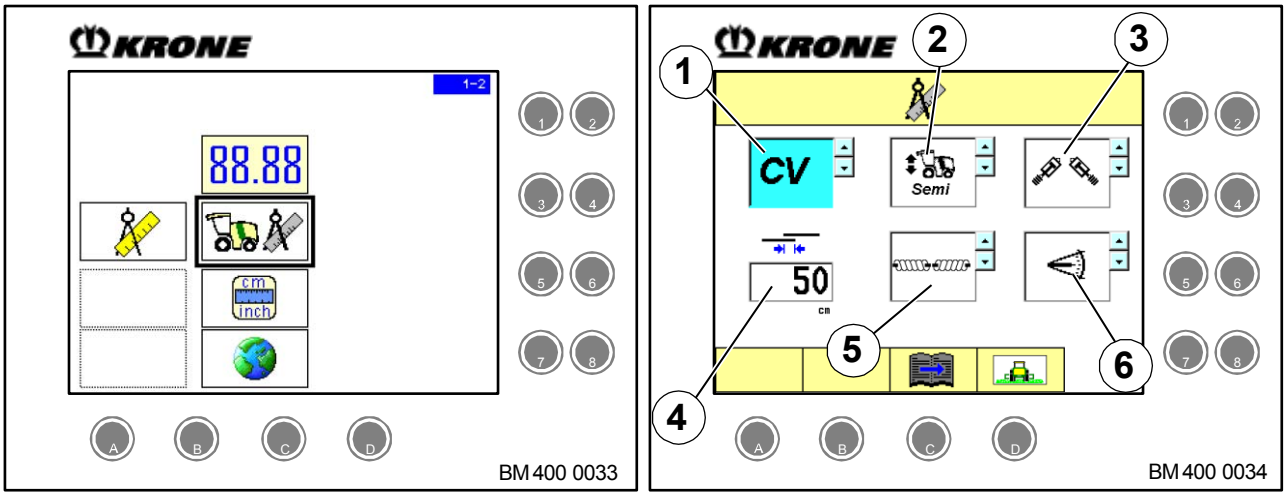


Fig. 100:

Main menu 1 "Settings" appears:

- Select main menu 1-2 "Machine setting" with the rotary potentiometer.
- Press the rotary potentiometer.

The display shows menu level "Machine setting".

The "Machine setting" menu is divided into 3 pages:

Explanation of menu for pages 1 to 3:

- Press the B key to bring up the previous page of the "Machine setting" menu.
- Press the C key to bring up the next page of the "Machine setting" menu.
- Activating the D key brings up the basic screen.
- You can use the rotary potentiometer to select the desired setting. The selection box is highlighted in colour.
- Pressing the rotary potentiometer allows you to jump to the selection box.
- You can use the rotary potentiometer to set the desired value.
- Pressing the rotary potentiometer causes the setting to be applied and returns you from the selection box
- Pressing the key on the rotary potentiometer takes you one menu level back.

Setting Options (page 1/3)

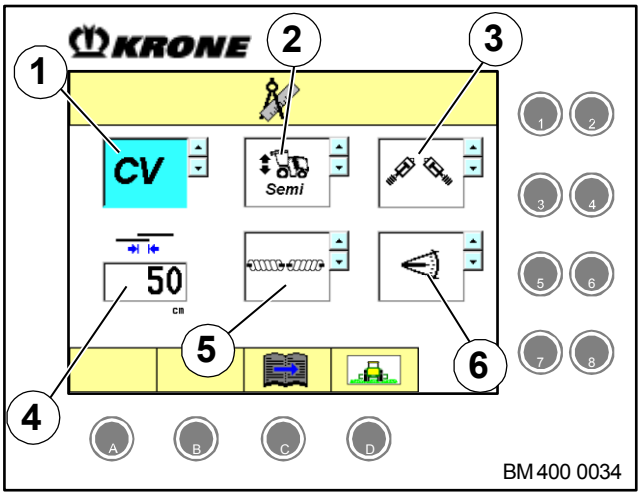


Fig. 101:

1) Select between

CV = tines conditioner

and

CRI= roller conditioner

2) Setting for lifting mechanism, front axle on headland

Front axle can only be raised in manual mode.

Semi

Semi-automatic lifting:

The semi-automatic lifting mechanism moves the front axle into the operating position as soon as at least one mowing unit drive is connected.

Auto

Automatic lifting:

The automatic lifting mechanism moves the front axle into the operating position,

- as soon as at least one mowing unit drive is connected

or

- a mowing unit is lowered from the headland position into the operating position. In addition, the automatic lifting mechanism lifts the front axle again as soon as the "lift all mowing units" function is actuated on the multi-function lever.

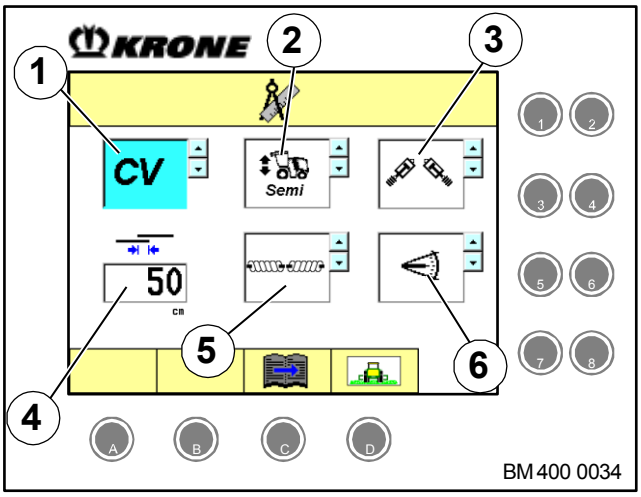


Fig. 102:

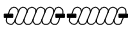
3) Spring compensation setting

Hydraulically adjustable spring compensation switched on.

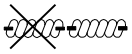
Hydraulically adjustable spring compensation switched off.

4) Adjust overcut in cm / inch

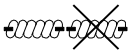
5) Setting: Auger monitoring



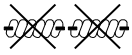
Both augers on



Right auger on



Left auger on



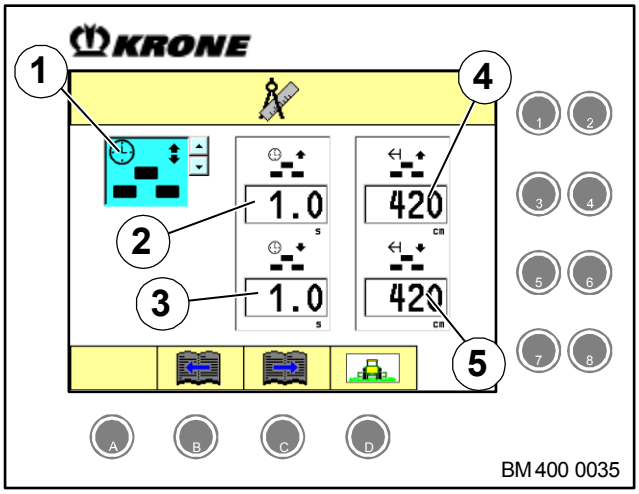
Both augers on

6) Switch hydraulically adjustable cutting height on and off

Hydraulically adjustable cutting height switched on.

Hydraulically adjustable cutting height switched off.

Setting options (page 2/3)



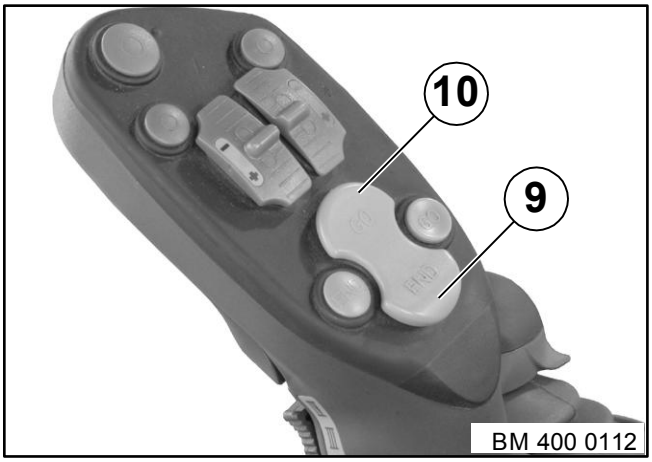


Fig. 103:

1) Setting time / distance control

The following descriptions refer to function (9,10) "Raise/lower all mowing units" on the multi-function lever.

Time control (determines the delay time of lifting or lowering the lateral mowing units to the front mowing unit)

Distance control (determines the distance still to be covered before the lateral mowing units are raised or lowered to the front mowing unit).

2) Input field: Delay time to raise lateral mowing units.

3) Input field: Delay time to lower lateral mowing units.

4) Input field: Distance to be covered before lifting lateral mowing units.

5) Input field: Distance to be covered before lowering lateral mowing units.

Setting Options (page 3/3)

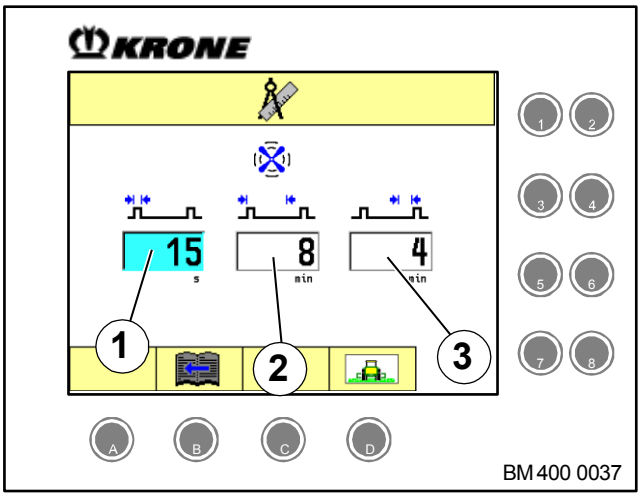


Fig. 104:

To set automatic cleaning time:

You can set the cleaning time, pause time and window time here.

1) Cleaning time = The time the compressor is running.

2) Pause time = The time in which no automatic cleaning is performed.

3) Window time =

- If the "Raise mower" function is triggered within the window time, the cleaning time begins.
- If the "Raise mower" function is not triggered within the window time, the cleaning time begins no later than when the window time elapses.

The time interval begins as soon as at least one of the mowing unit drives has been turned on.

Note

The time interval until the cleaning time begins consists of the pause time and the window time.

6.6.1 Menu 1-3 "Units"

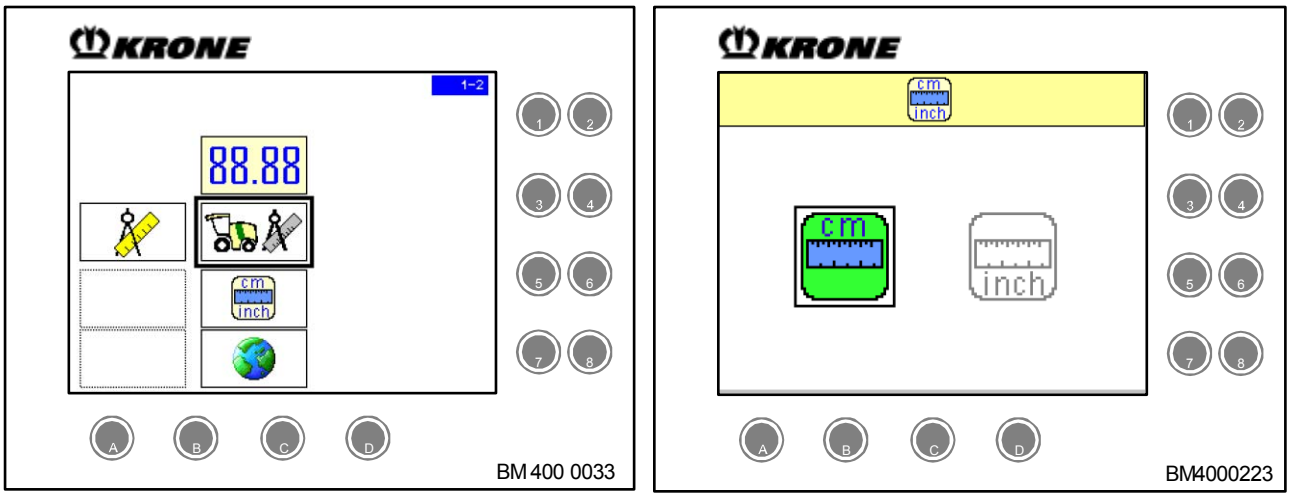


Fig. 105:

Main menu 1 "Settings" appears:

- Select menu 1-3 "Units" with the rotary potentiometer.
- Press the rotary potentiometer.

The display indicates the selected measuring units. The currently set measuring unit is highlighted in colour.

= Anglo-American units active

= English/American units active

= Metric (SI) units

= Metric (SI) units inactive

Setting the measuring units:

- You can use the rotary potentiometer to select the desired setting.
- Pressing the rotary potentiometer causes the setting to be applied. (The selection box is highlighted in colour.)
- Pressing the key on the rotary potentiometer takes you one menu level back.

6.6.2 Menu 1-4 "Language"

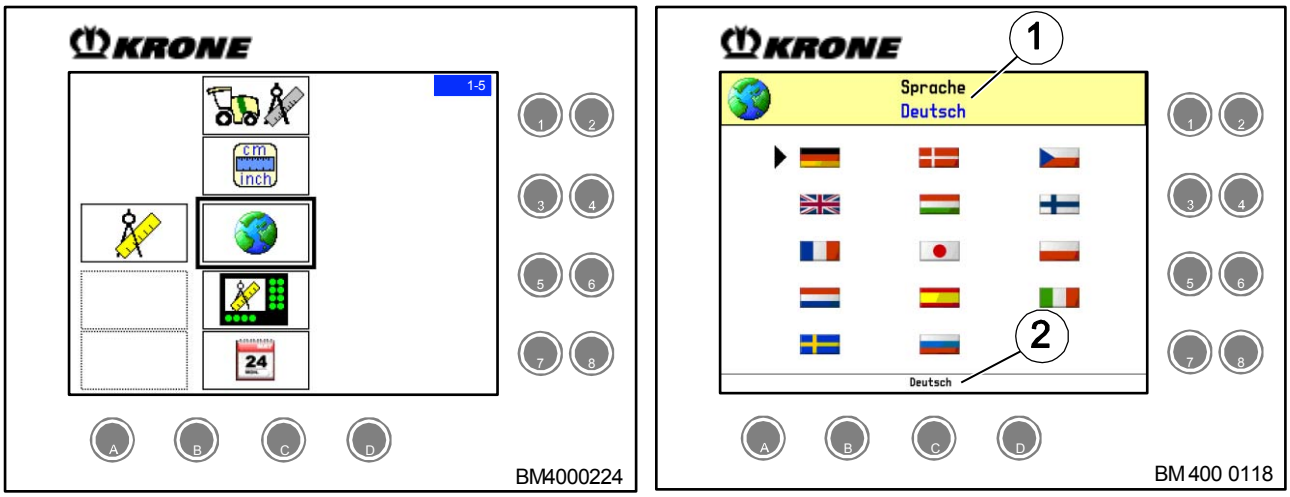


Fig. 106:

Main menu 1 "Settings" appears:

- Select menu 1-4 "Language" with the rotary potentiometer.
- Press the rotary potentiometer.

The display shows the language selection.

Set language

(1) = currently set language

(2)= shows the selected language

- You can select the language you want with the rotary potentiometer.
- To confirm the selection, press the rotary potentiometer.
- Pressing the key on the rotary potentiometer takes you one menu level back.

Note

The selected language will be active after the machine is restarted (ignition off and on again)

6.6.3 Menu 1-5 "Display"

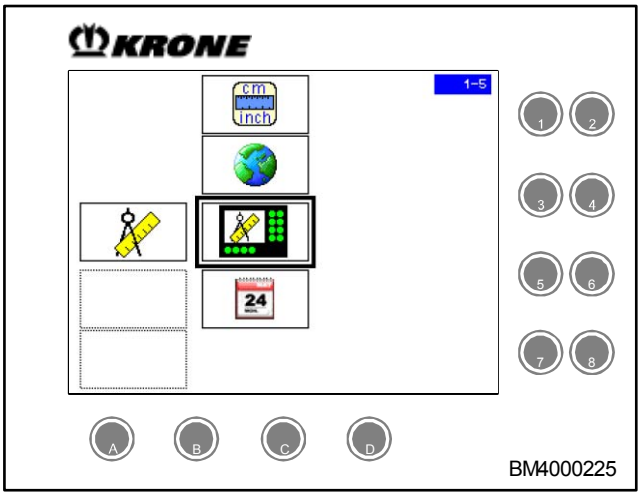


Fig. 107:

Main menu 1 "Settings" appears:

- Select menu 1-5 "Display" with the rotary potentiometer.
- Press the rotary potentiometer.

The display shows menu level 1 "Display".

The "Display" menu is divided into two sub-menus:

= menu 1-5-1 "Contrast"

= Menu 1-5-2 "Beeper"

- Pressing the key on the rotary potentiometer takes you one menu level back.

6.6.4 menu 1-5-1 "Contrast"

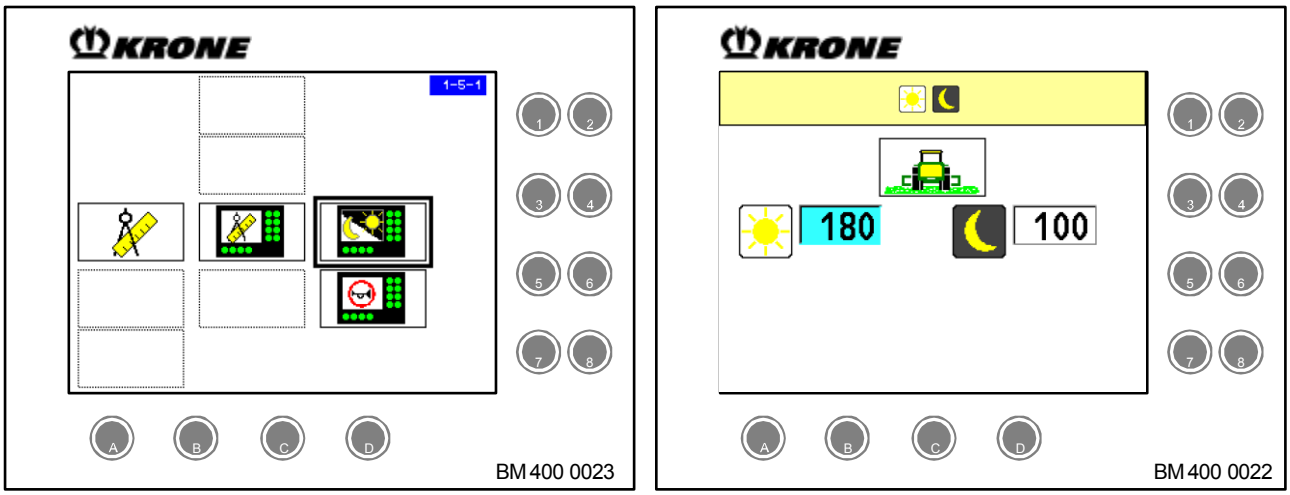


Fig. 108:

You can adjust the brightness of the display in the "Contrast" Diagnostics menu.

Menu 1-5 "Display" is active.

- Select menu 1-5-1 "Contrast" with the rotary potentiometer.
- Press the rotary potentiometer.

The "Contrast" setting appears.

= Day design

= Night design

The value after the symbols / indicates the set brightness value.

Setting and saving the brightness

The higher the value after the symbols / the greater the brightness of the display.

- You can use the rotary potentiometer to select the desired selection. (The selection box is highlighted in colour.)
- Pressing the rotary potentiometer allows you to jump to the selection box. (The selection box is highlighted in colour.)
- Turning the rotary potentiometer increases or reduces the value.
- Pressing the rotary potentiometer causes the setting to be applied and returns you from the selection box.
- Pressing the key on the rotary potentiometer takes you one menu level back.

6.6.5 Menu 1-5-2 Beeper

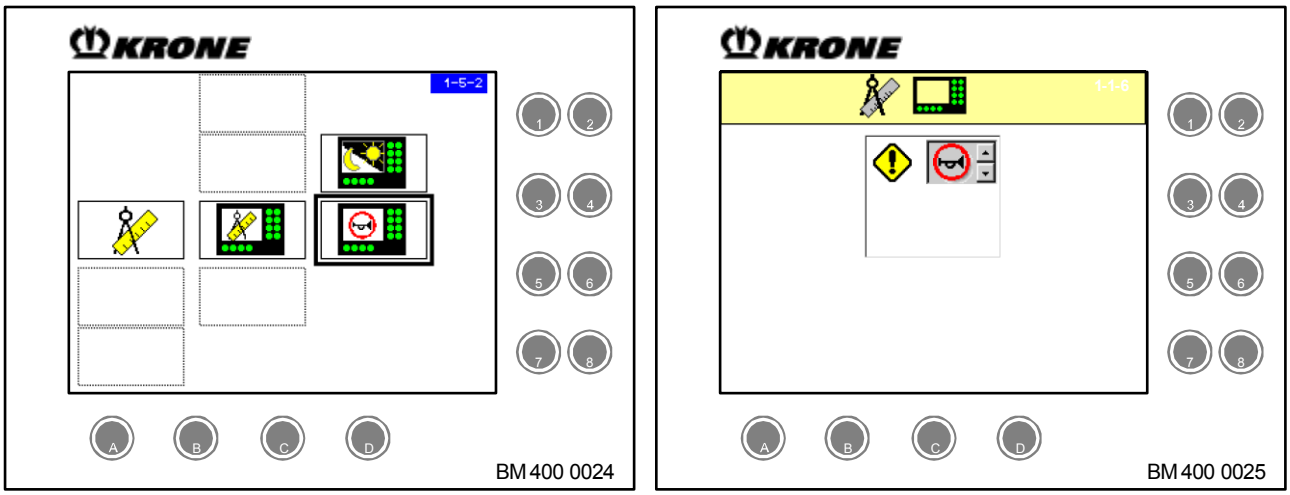


Fig. 109:

The acoustic signal (beeper) for alarm messages can be activated and deactivated in this menu and the duration of the tone can be set.

Menu 1-5 "Display" is active.

- Select menu 1-5-2 "Beeper" with the rotary potentiometer.
- Press the rotary potentiometer.

The display indicates the beeper settings.

= Alarm

Beeper function

= Beeper inactive

= Beeper active

= Beeper limited by time

Activate/deactivate beeper

- Pressing the rotary potentiometer allows you to jump to the selection box. (The selection box is highlighted in colour.)
- You can use the rotary potentiometer to adjust the desired function.
- Pressing the rotary potentiometer causes the setting to be applied and returns you from the selection box.
- Pressing the key on the rotary potentiometer takes you one menu level back.

6.6.6 Beeper limited by time

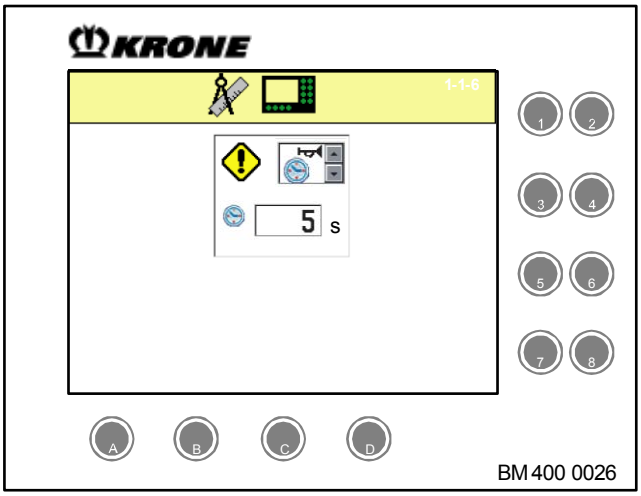


Fig. 110:

- Pressing the rotary potentiometer allows you to jump to the selection box. (The selection box is highlighted in colour.)
- You can use the rotary potentiometer to select the desired setting ( ).
- Press the rotary potentiometer (a new input field appears).
- Press the rotary potentiometer to jump to a new input field. (The input box is highlighted in colour.)
- Press the rotary potentiometer. (The input box is highlighted in colour.)
- You can use the rotary potentiometer to set the desired value.
- Pressing the rotary potentiometer causes the setting to be applied and returns you from the selection box.
- Pressing the key on the rotary potentiometer takes you one menu level back.

6.6.7 Menu 1-6 "Date/time"

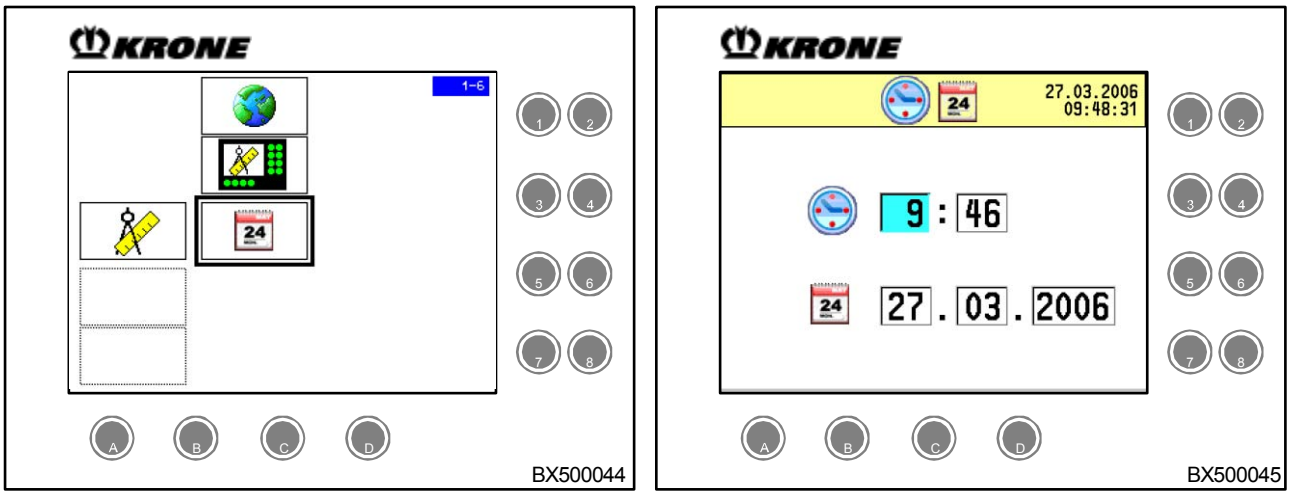


Fig. 111:

Main menu 1 "Settings" appears:

- Select menu 1-6 "Date/time" with the rotary potentiometer.
- Press the rotary potentiometer.

The display shows the date and the time.

To set date/time

- You can use the rotary potentiometer to select the desired setting. The entry box is highlighted in colour.
- Pressing the rotary potentiometer allows you to jump to the input field.
- Set the desired date/time with the rotary potentiometer.
- Pressing the rotary potentiometer causes the setting to be applied and returns you from the selection field.
- Pressing the key on the rotary potentiometer takes you one menu level back.

6.7 Main Menu 2 "Counters"

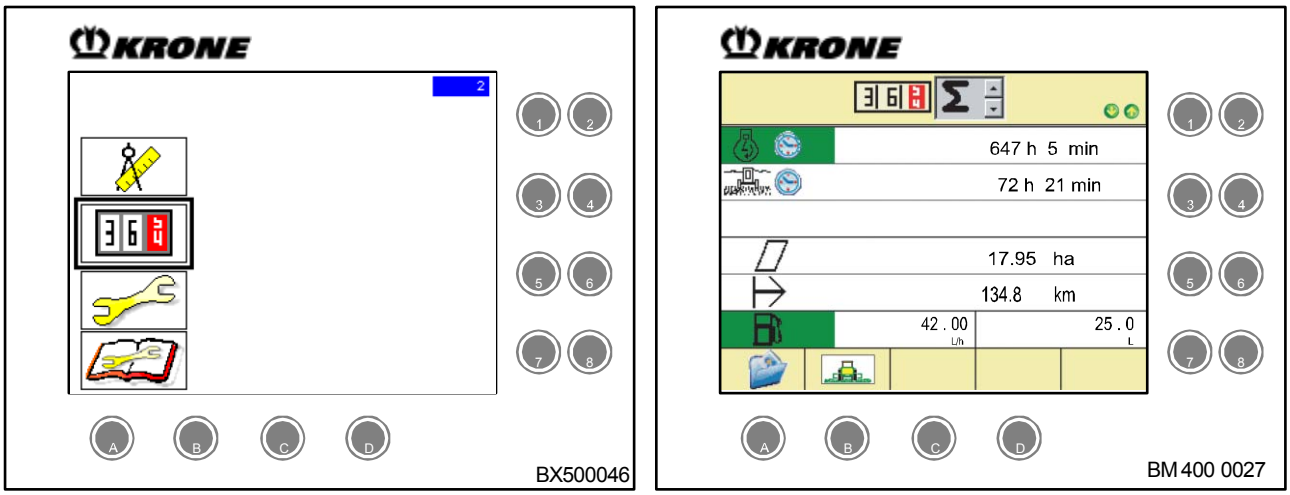


Fig. 112:

- You can bring up a menu level with the key on the rotary potentiometer.
- Select main menu 2 "Counter" with the rotary potentiometer.
- Press the rotary potentiometer.

The display shows various counters.

Counter level (sets)

Σ = total bale counter (cannot be deleted)

1 = counter level 1 (can be deleted)

2 = counter level 2 (can be deleted)

3 = counter level 3 (can be deleted)

6.7.1 Machine Data Counter

Counter (active counters are highlighted colour)

= operating hour counter (h)

= working hours counter (h)

= surface counter (ha)

= odometer (both road and field mode)

= fuel consumption (l)

6.7.1.1 Deleting the Machine Data Counters (Sets 1 to 3)

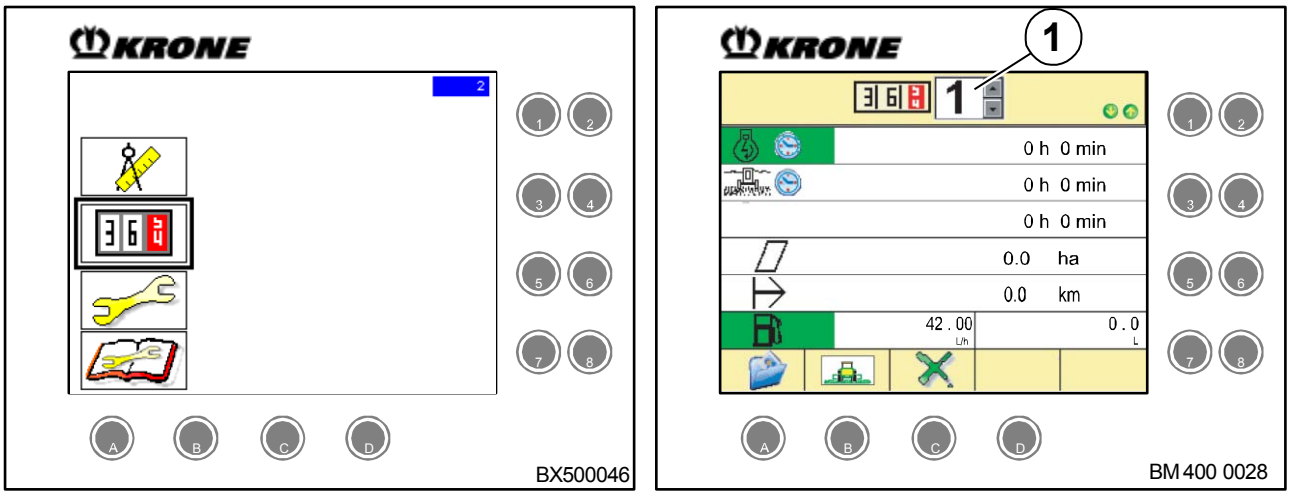


Fig. 113:

Machine data for counter levels (sets) 1 to 3 can be deleted in this menu.

- You can bring up a menu level with the key on the rotary potentiometer.
- Select main menu 2 "Counter" with the rotary potentiometer.
- Press the rotary potentiometer.

The display shows various counters.

- Activate the 1 key for or the 2 key to select the counter level (1) to be deleted.
- Pressing the C key under the softkey deletes all counters in a set. (Only the counters of sets 1 to 3 can be deleted.)
- Pressing the key on the rotary potentiometer takes you one menu level back.
- Pressing the B key under the softkey brings up the basic screen

6.7.2 Switching to Customer DataCounters

- Pressing the A key under the softkey brings up the "Customer data counter" menu.

For more information, see Section "Customer Data Counters"

6.8 Main Menu 3 "Maintenance"

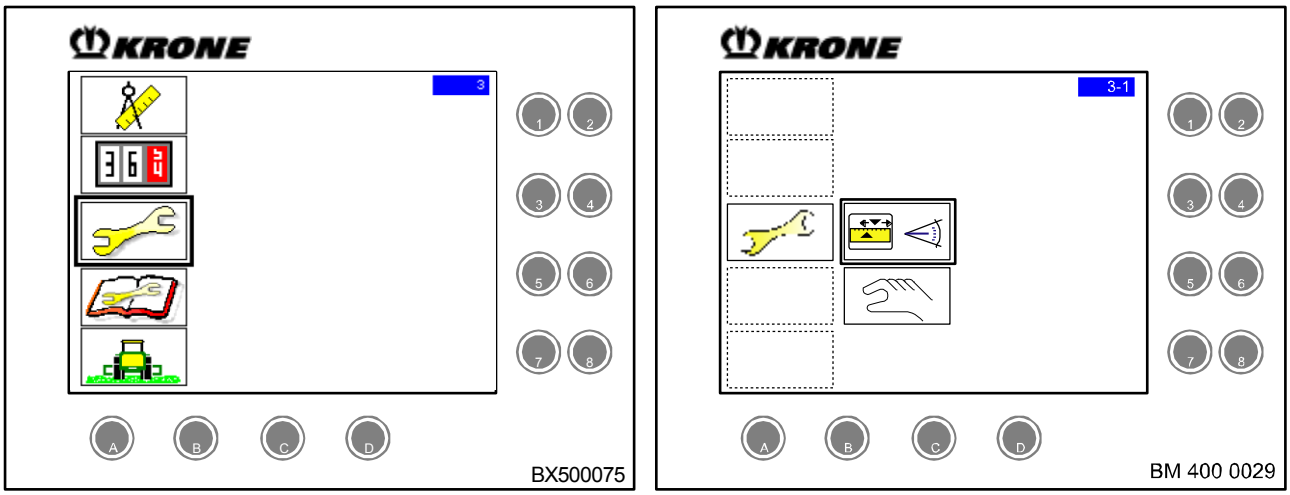
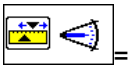


Fig. 114:

- You can bring up a menu level with the key on the rotary potentiometer.
- Select main menu 3 "Maintenance" with the rotary potentiometer.
- Press the rotary potentiometer.

The display shows menu level 3 "Maintenance".

The main menu “Maintenance” is divided up into two menus:


= Menu 3-1 "Calibration of cutting height"

= Menu 3-2 „Manual mode“

- Pressing the key on the rotary potentiometer takes you one menu level back.

6.8.1 Menu 3-1 "Calibration of cutting height"

Danger!

Unexpected switching on of drives

Effect: Danger to life or serious injuries.

- **Travelling gear release switch must be switched off.**
- **Observe the following instructions very precisely!**

The sensors have been adjusted to record cutting height in the factory. Heavy demand and the setting of components may cause an offset in the cutting pattern of the right / left and front mowing unit. If this happens, the sensors must be recalibrated.

Note

Perform calibration on an even and solid surface.

- Switch off the travelling gear release switch
- You can use the "Hydraulic axle suspension" key to move from the basic screen to mowing position. (See chapter "Quick Access to Hydraulic Axle Suspension".)
- Use the multi-function lever to move the 3 mowing units into working position (float setting).

Adjust all mowing units to 0°.

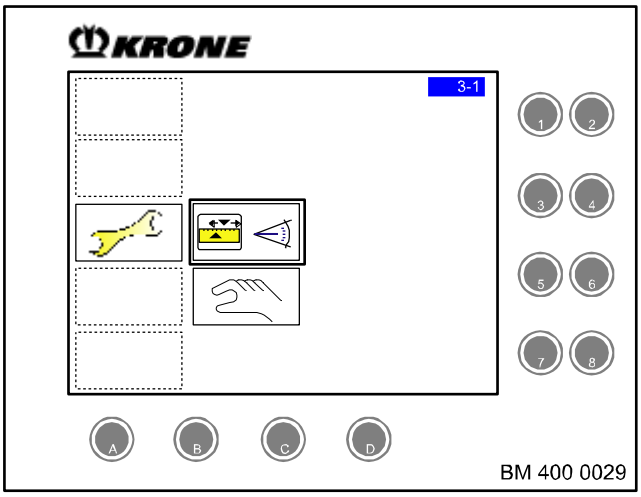


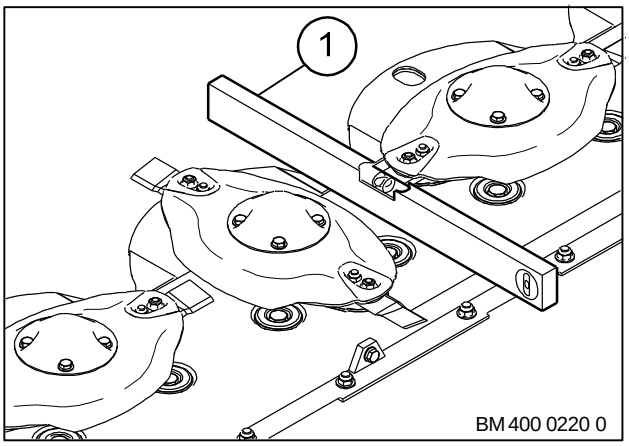
Fig. 115:

To do this:

- You can bring up a menu level with the key on the rotary potentiometer.
- Select main menu 3 "Maintenance" with the rotary potentiometer.
- Press the rotary potentiometer.
- Select menu 3-1 "Calibration of cutting height" with the rotary potentiometer.
- Press the rotary potentiometer.

The display shows the cutting height setting.

Aligning the Mowing Units



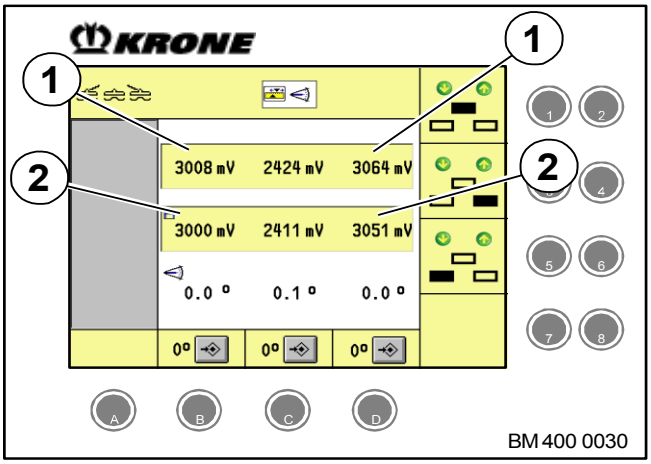


Fig. 116:

Front mowing unit:

- Place a manual spirit level centred on the cutter bar.
- Use the 1 key or 2 key to align the cutter bar horizontally.

Lateral mowing unit right:

- Place a manual spirit level centred on the cutter bar.
- Use the 3 or 4 key to align the cutter bar horizontally.

Lateral mowing unit left:

- Place a manual spirit level centred on the cutter bar.
- Use the 5 6 6 key to align the cutter bar horizontally.
- Loosen the angle of rotation sensors on the right and left mowing unit and set them in the oblong hole until a value (1) of about 2900 mV to 3100 mV appears in the display (calibration screen).
- Screw the angle of rotation sensors tightly into place.
- Sensor value (2) for inclination 0° by activating keys

B = left mowing unit

C = front mowing unit

Note

The sensor for the front mowing unit is not adjustable. However, the value must be accepted at this point.

D = accept right mowing unit.

6.8.2 Menu 3-4 „Manual mode“

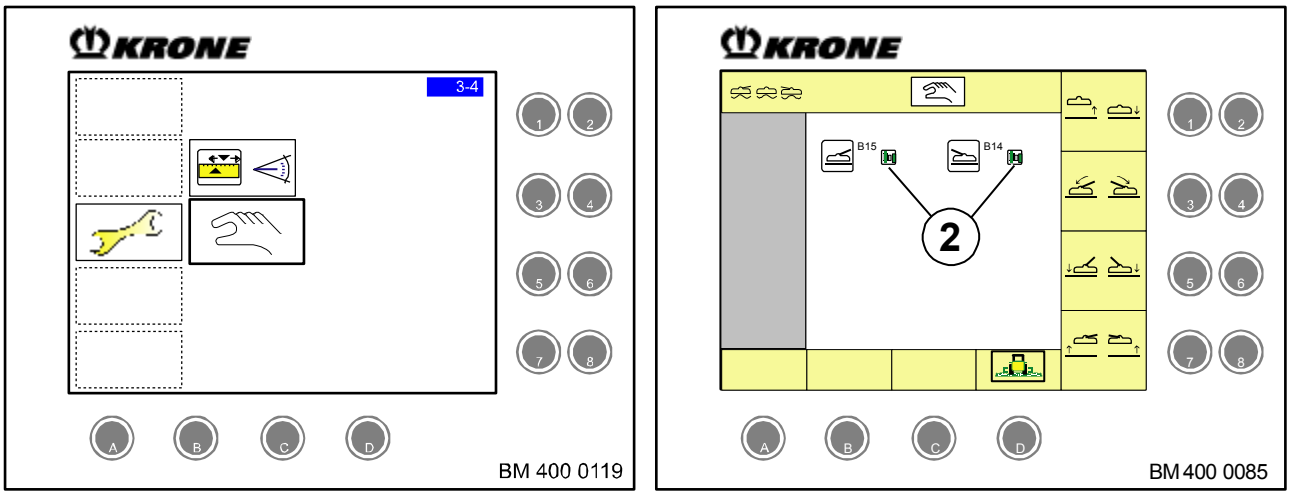


Fig. 117:

Under this menu item, mowing units can be lowered (inching) from transport into headland position and further into working position with the display. Or raised from working position into headland position and further into transport position.

Note

Lifting/lowering the mowing units is inching, which means there is no float position for lower mowing units.

- You can bring up a menu level with the key on the rotary potentiometer.
- Select main menu 3 "Maintenance" with the rotary potentiometer.
- Press the rotary potentiometer.
- Select menu 3-4 "Manual mode" with the rotary potentiometer.
- Press the rotary potentiometer.

The display indicates Manual mode.

Explanation of symbols:

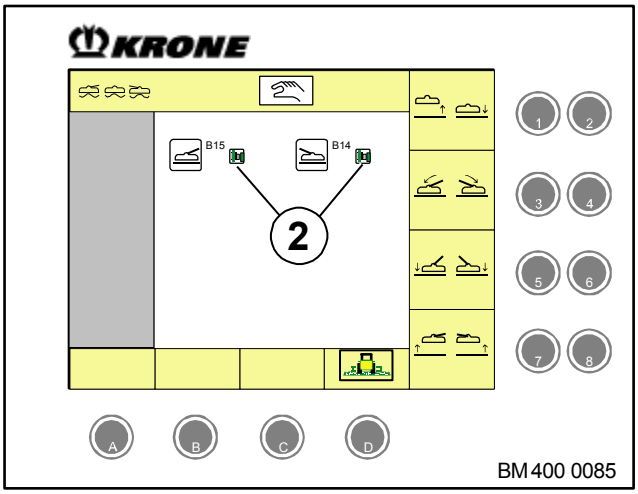


Fig. 118:

= raise front mowing unit inching with the 1 key.

= lower front mowing unit inching with the 2 key.

= fold down left mowing unit inching from transport position to headland position with the 3 key.

= fold down right mowing unit inching from transport position to headland position with the 4 key.

= lower left mowing unit inching from headland position to working position with the 5 key.

= lower right mowing unit inching from headland position to working position with the 6 key.

= raise left mowing unit inching from working position to transport position with the 7 key.

= raise right mowing unit inching from working position to transport position with the 8 key.

6.8.3 Status display of general sensors (2)

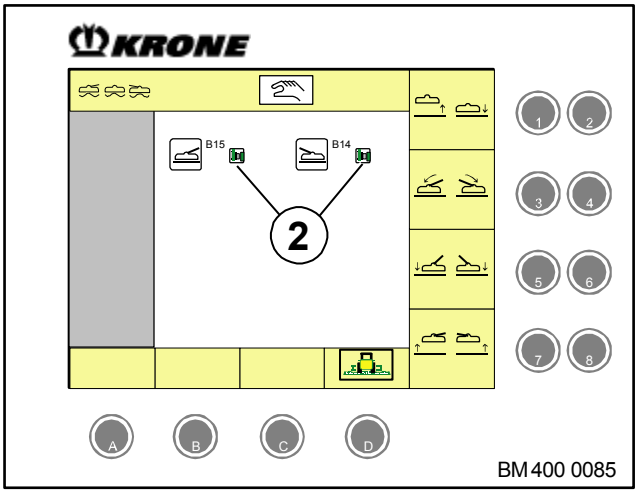


Fig. 119:

= Sensor B15 position mowing unit left

= Sensor B14 position mowing unit right

• = Broken cable sensor

• = Sensor alive

• = Sensor not alive

• = Sensor short circuit

- Activating the D key brings up the basic screen.
- Pressing the key on the rotary potentiometer takes you one menu level back.

6.9 Main Menu 4 Service

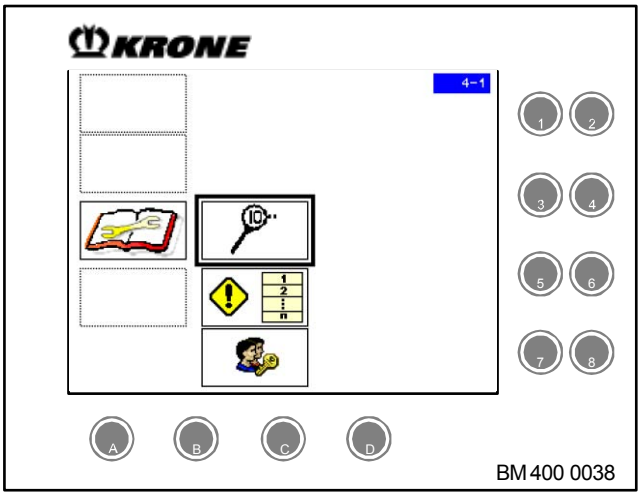


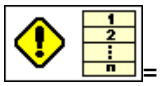
Fig. 120:

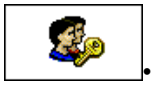
- You can bring up a menu level with the key on the rotary potentiometer.
- Select main menu 4 "Service" with the rotary potentiometer.
- Press the rotary potentiometer.

The display shows menu level 4 "Service".

The main menu "Service" is divided up into four menus:

= Menu 4-1 "Diagnostics"

 = Menu 4-2 "Error list"


- = Menü 4-3 "Fitter's section (password-protected")

- = Menu 4-4 "Information"

- Pressing the key on the rotary potentiometer takes you one menu level back.

6.9.1 Menu 4-1 "Diagnostics"

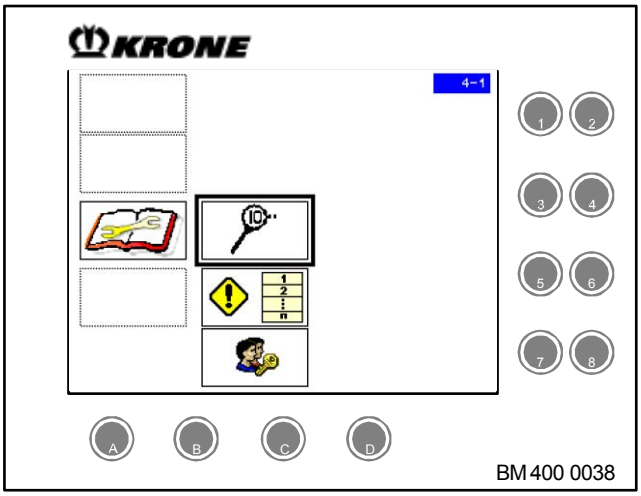


Fig. 121:

Main menu level 4 "Service" is called.

- Select main menu 4-1 with the rotary potentiometer .
- Press the rotary potentiometer.

The display shows menu level 4-1 "Diagnostics".

The "Diagnostics" main menu is divided into thirteen menus:

= Menu 4-1 "Front axle"

= Menu 4-1-3 "Spring compensation"

= Menu 4-1-4 "Cutting height"

= Menu 4-1-5 "Swath hood"

= Menu 4-1-6 "Sideshift"

= Menu 4-1-10 "Work"

= Menu 4-1-11 "CAN bus"

= Menu 4-1-12 "Travelling gear"

= Menu 4-1-13 "Electronics"

= Menu 4-1-14 "Diesel engine"

= Menu 4-1-15 "Joystick"

= Menu 4-1-16 "Control unit console"

= Menu 4-1-17 "Terminal"

- Pressing the key on the rotary potentiometer takes you one menu level back.

6.9.2 Display of Release Conditions Not Met for Diagnostics

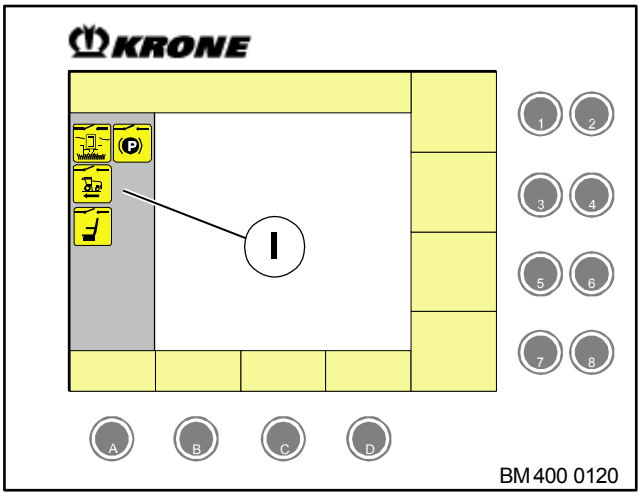


Fig. 122:

Menu field (I) shows conditions that have not yet been met but which must be met to be able to perform diagnostics. An appropriate remedy must be found in each case.

= Diesel engine speed not at 2000 rpm

= Diesel engine has not been started

= Diesel engine is not off

= Speed of vehicle is not correct

= Switch the axle separation release switch on or off

= Switch the release switch autopilot on or off

= Switch the travelling gear release switch on or off

= Switch the road/field release switch on or off

= Turn release switch for parking brake on or off

= Seat switch (driver's seat is unoccupied)

= Open or close door

6.9.3 Display of possible faults for diagnostics

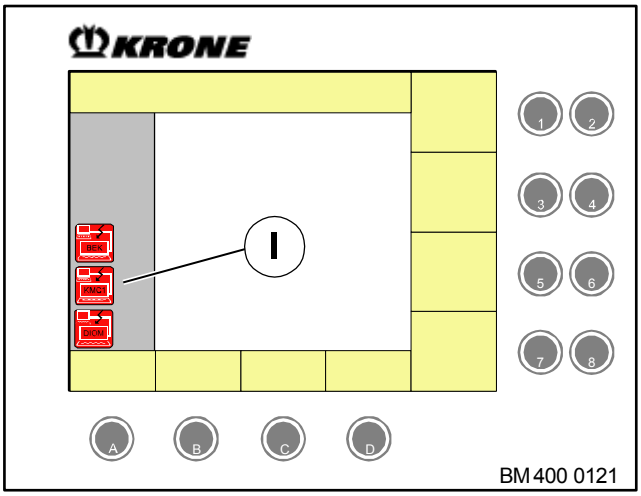


Fig. 123:

The faults listed below may appear in menu field (I).

= Error CAN to ADM 1

= Error CAN to CU

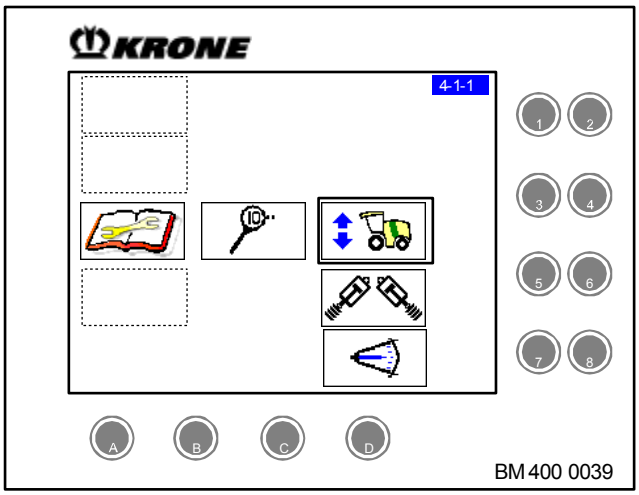
= Error CAN to DIOM

= Error CAN to Joystick

= Error CAN to KMC1

= Error CAN to SD

6.9.4 Menu 4-1-1 "Diagnostics of axle suspension"



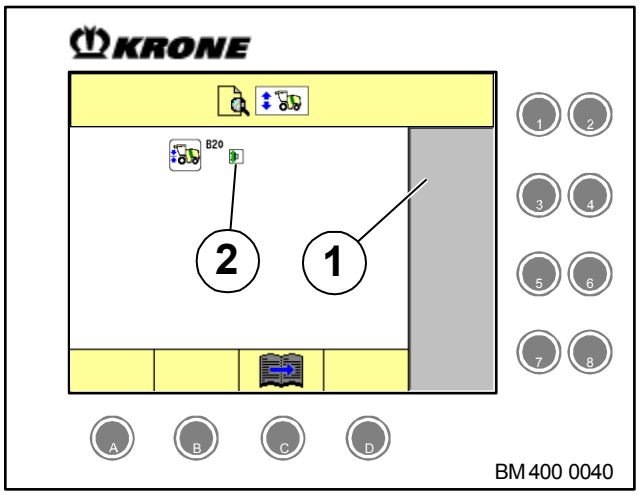


Fig. 124:

Call the "Diagnostics" main menu 4.

Select menu 4-1-1 "Diagnostics of axle suspension" with the rotary potentiometer.

- Press the rotary potentiometer.

Axle suspension diagnostics appears.

The "Axle suspension" diagnostics menu is divided into 2 pages.

Page 1: Sensor test

Page 2: Actuator test

Menu control for pages 1 to 2:

Note

For release conditions (1) not met see Section "Display of Release Conditions Not Met for Diagnostics"

For faults (1) see Section "Display of Possible Faults for Diagnostics"

- Press the C key to bring up the next page of the "Diagnostics of front axle" menu.
- Press the B key to bring up the previous page of the menu.
- Pressing the key on the rotary potentiometer takes you one menu level back.

Sensor Test (page 1/2)

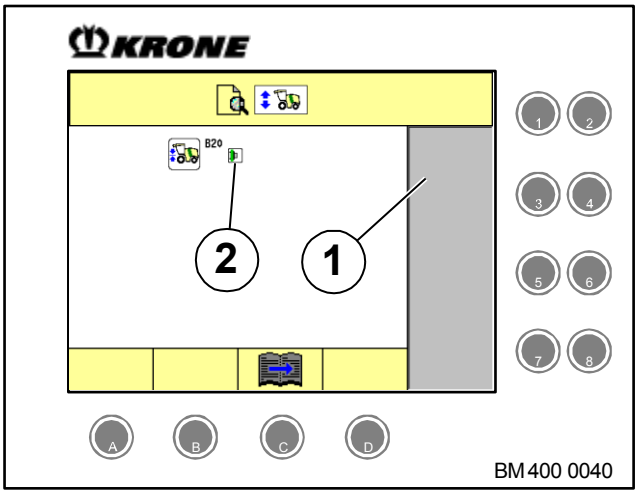


Fig. 125:

Status display of general sensors (2)

= Sensor B20 axle suspension

• = Broken cable sensor

• = Sensor alive

• = Sensor not alive

• = Sensor short circuit

Actuator test (page 2/2)

Danger!

Unexpected actions on the machine.

Effect: Danger to life or serious injuries.

- **Only persons familiar with the machine are permitted to perform the actuator test.**
- **The person performing the test must know which machine parts are moved by controlling the actuators.**
- **The actuator test must only be performed from a safe position outside the area that is affected by machine parts moved by the actuators.**
- **Make certain there are no persons, animals or objects in the danger zone.**

Note

If an actuator is turned on, the next or previous page cannot be called. (If necessary, turn the actuator off and repeat the process)

The actuator test is used to test actuators that have been attached to the machine for the “Axle suspension” function.

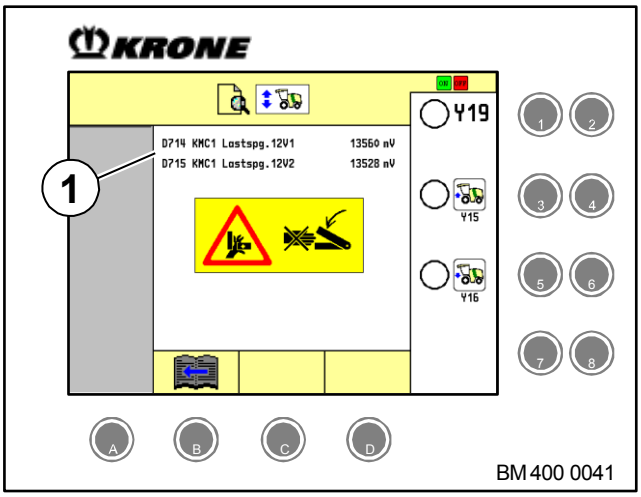


Fig. 126:

(1) Shows required voltage for the actuators.

Possible status display of the selected actuator

○ Actuator turned off

● Actuator turned on

Note

The status displays described above are valid for all actuators related to axle suspension.

Valve	Icon	Description	Switch on the actuator	Turn off the actuator
Y19		Main valve	1	2
Y15		Lifting axle suspension	3	4
Y16		Lowering axle suspension	5	6

6.9.5 Menu 4-1-3 "Diagnostics of spring compensation"

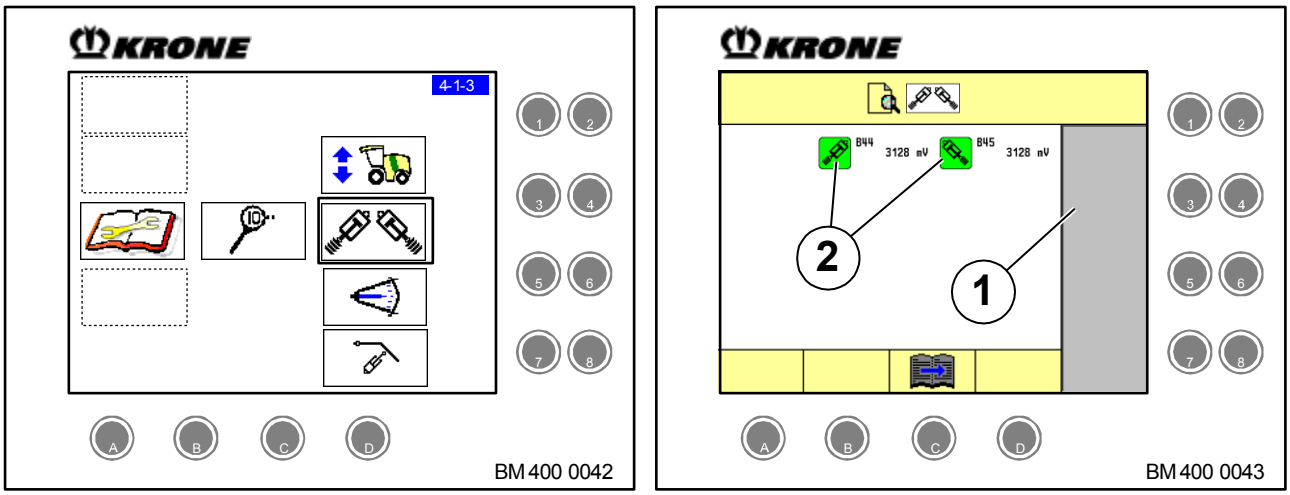


Fig. 127:

Call the "Diagnostics" main menu 4.

- Select menu 4-1-3 "Diagnostics of spring compensation" with the rotary potentiometer.
- Press the rotary potentiometer.

Spring compensation diagnostics appears.

The "Spring compensation" diagnostics menu is divided into 3 pages.

Page 1: Sensor Test

Page 2: Actuator test

Page 3: Actuator test

Menu control for pages 1 to 3

Note

For release conditions (1) not met see Section "Display of Release Conditions Not Met for Diagnostics"

For faults (1) see Section "Display of Possible Faults for Diagnostics"

- Press the C key to bring up the next page of the "Diagnostics of front axle" menu.
- Press the B key to bring up the previous page of the menu.
- Pressing the key on the rotary potentiometer takes you one menu level back.

Sensor test spring compensation (2) (page 1/3)

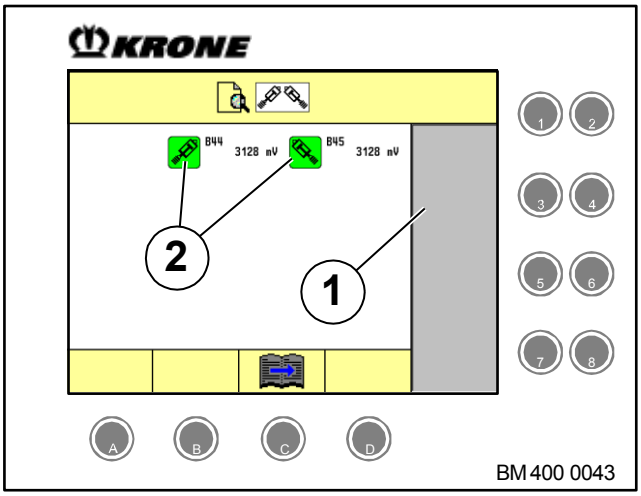


Fig. 128:

The sensor test is used to test sensors that have been attached to the machine for the spring compensation function.

Sensor	Sensor OK green	Sensor inactive transparent	Sensor not OK red	Description
B44				Spring compensation left
B45				Spring compensation right

Actuator test (page 2/3)

Danger!

Unexpected actions on the machine.

Effect: Danger to life or serious injuries.

- **Only persons familiar with the machine are permitted to perform the actuator test.**
- **The person performing the test must know which machine parts are moved by controlling the actuators.**
- **The actuator test must only be performed from a safe position outside the area that is affected by machine parts moved by the actuators.**
- **Make certain there are no persons, animals or objects in the danger zone.**

Note

If an actuator is turned on, the next or previous page cannot be called. (If necessary, turn the actuator off and repeat the process)

The actuator test is used to test actuators that have been attached to the machine for the “Spring compensation” function.

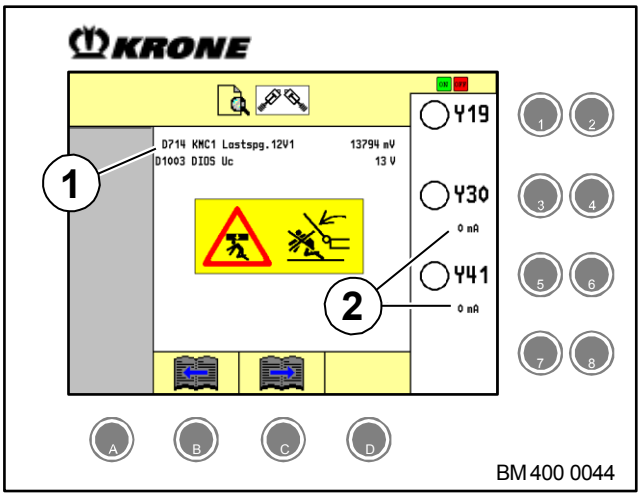


Fig. 129:

1. Shows required voltage for the actuators.
2. Shows current flow with the actuator activated.

Possible status display of the selected actuator

○ Actuator turned off

● Actuator turned on

Note

The status displays described here apply to all actuators related to valves (main valve, additional valve1 and additional valve2).

Valve	Icon	Description	Switch on the actuator	Turn off the actuator
Y19		Main valve	1	2
Y30		Additional valve 1	3	4
Y41		Additional valve 2	5	6

Actuator test (page 3/3)

Danger!

Unexpected actions on the machine.

Effect: Danger to life or serious injuries.

- **Only persons familiar with the machine are permitted to perform the actuator test.**
- **The person performing the test must know which machine parts are moved by controlling the actuators.**
- **The actuator test must only be performed from a safe position outside the area that is affected by machine parts moved by the actuators.**
- **Make certain there are no persons, animals or objects in the danger zone.**

Note

If an actuator is turned on, the next or previous page cannot be called. (If necessary, turn the actuator off and repeat the process)

The actuator test is used to test actuators that have been attached to the machine for the “Spring compensation” function.

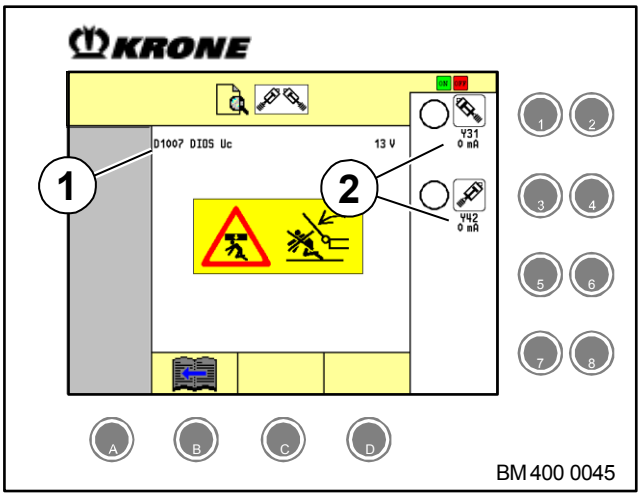


Fig. 130:

1. Shows required voltage for the actuators.
2. Shows current flow with the actuator activated.

Possible status display of the selected actuator

○ Actuator turned off

● Actuator turned on

Note

The status displays described here apply to all actuators related to spring compensation.

Valve	Icon	Description	Switch on the actuator	Turn off the actuator
Y31		Spring compensation right	1	2
Y42		Spring compensation left	3	4

6.9.6 Menu 4-1-4 "Diagnostics of cutting height"

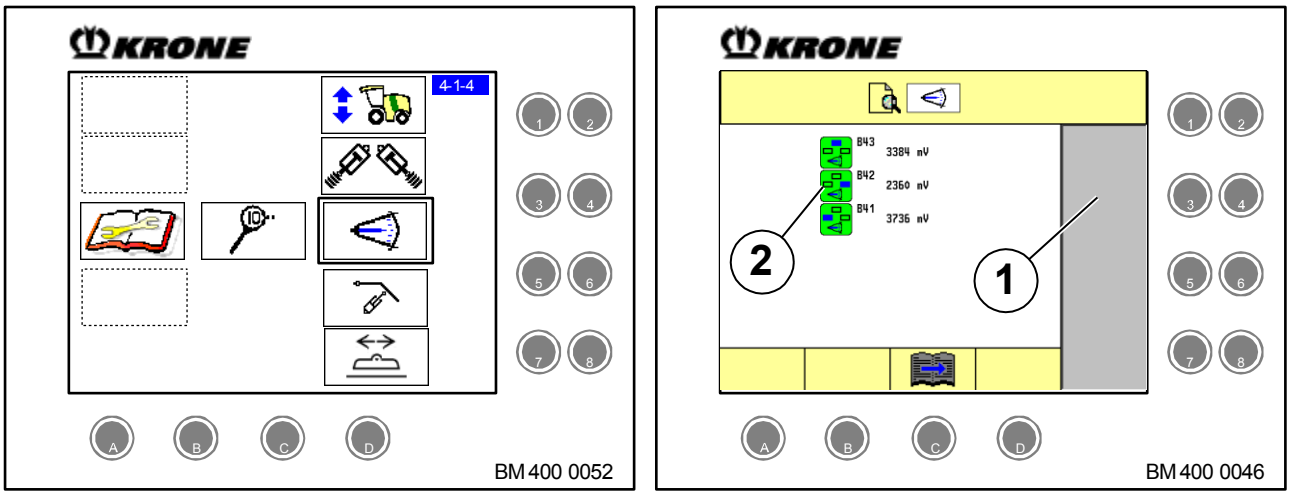


Fig. 131:

Call the "Diagnostics" main menu 4.

- Select menu 4-1-3 "Diagnostics of cutting height" with the rotary potentiometer.
- Press the rotary potentiometer.

Cutting height diagnostics appears.

The "Cutting height" diagnostics menu is divided into 4 pages.

Page 1: Sensor test
Page 2: Actuator test
Page 3: Actuator test
Page 4: Actuator test
Menu control for pages 1 to 4

Note

For release conditions (1) not met see Section "Display of Release Conditions Not Met for Diagnostics"

For faults (1) see Section "Display of Possible Faults for Diagnostics"

- Press the C key to bring up the next page of the "Diagnostics of front axle" menu.
- Press the B key to bring up the previous page of the menu.
- Pressing the key on the rotary potentiometer takes you one menu level back.

Sensor test spring compensation (2) (page 1/4)

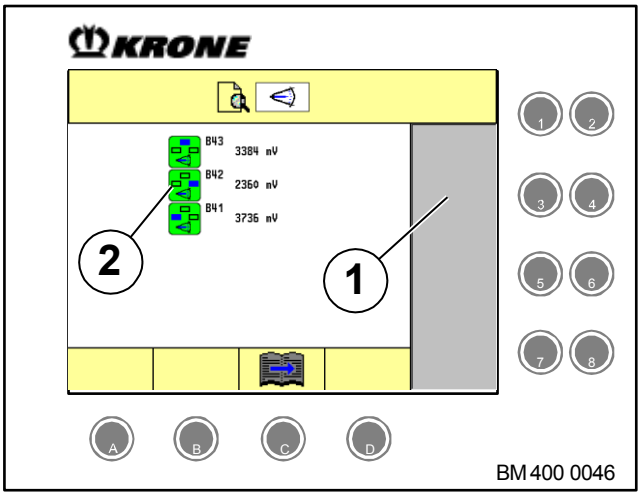


Fig. 132:

The sensor test is used to test sensors that have been attached to the machine for the spring compensation function.

Sensor	Sensor OK green	Sensor inactive transparent	Sensor not OK red	Description
B43				Cutting height – front mowing unit
B42				Cutting height – right lateral mowing unit
B41				Cutting height – left lateral mowing unit

Actuator test (page 2/4)

Danger!

Unexpected actions on the machine.

Effect: Danger to life or serious injuries.

- **Only persons familiar with the machine are permitted to perform the actuator test.**
- **The person performing the test must know which machine parts are moved by controlling the actuators.**
- **The actuator test must only be performed from a safe position outside the area that is affected by machine parts moved by the actuators.**
- **Make certain there are no persons, animals or objects in the danger zone.**

Note

If an actuator is turned on, the next or previous page cannot be called. (If necessary, turn the actuator off and repeat the process)

The actuator test is used to test actuators that have been attached to the machine for the “Cutting height” function.

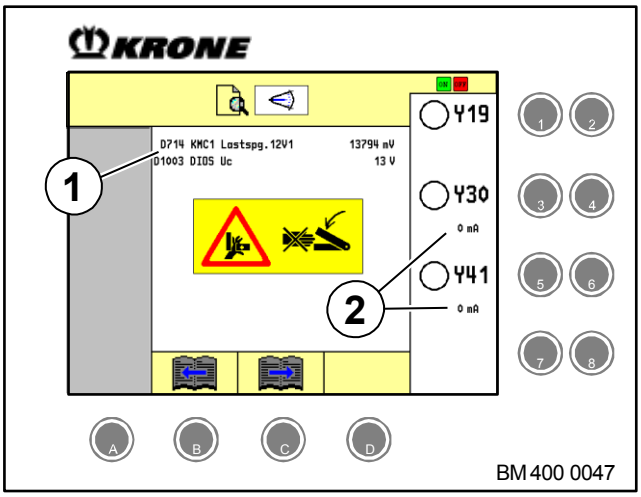


Fig. 133:

1. Shows required voltage for the actuators.
2. Shows current flow with the actuator activated.

Possible status display of the selected actuator

○ Actuator turned off

● Actuator turned on

Note

The status displays described here apply to all actuators related to valves (main valve, additional valve1 and additional valve2).

Valve	Icon	Description	Switch on the actuator	Turn off the actuator
Y19		Main valve	1	2
Y30		Additional valve 1	3	4
Y41		Additional valve 2	5	6

Actuator test (page 3/4)

Danger!

Unexpected actions on the machine.

Effect: Danger to life or serious injuries.

- **Only persons familiar with the machine are permitted to perform the actuator test.**
- **The person performing the test must know which machine parts are moved by controlling the actuators.**
- **The actuator test must only be performed from a safe position outside the area that is affected by machine parts moved by the actuators.**
- **Make certain there are no persons, animals or objects in the danger zone.**

Note

If an actuator is turned on, the next or previous page cannot be called. (If necessary, turn the actuator off and repeat the process)

The actuator test is used to test actuators that have been attached to the machine for the “Cutting height” function.

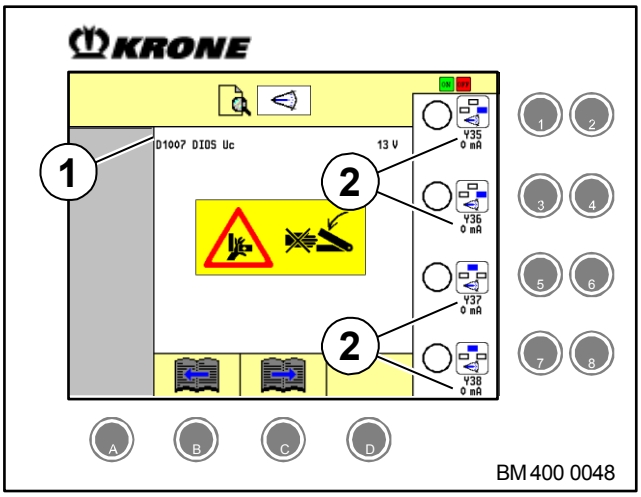


Fig. 134:

1. Shows required voltage for the actuators.
2. Shows current flow with the actuator activated.

Possible status display of the selected actuator

○ Actuator turned off

● Actuator turned on

Note

The status displays described here apply to all Actuators related to cutting height.

Valve	Icon	Description	Switch on the actuator	Turn off the actuator
Y34		Cutting height right 1	1	2
Y36		Cutting height right 2	3	4
Y37		Cutting height – front mowing unit 1	5	6
Y38		Cutting height – front mowing unit 2	7	8

Actuator test (page 4/4)

Danger!

Unexpected actions on the machine.

Effect: Danger to life or serious injuries.

- **Only persons familiar with the machine are permitted to perform the actuator test.**
- **The person performing the test must know which machine parts are moved by controlling the actuators.**
- **The actuator test must only be performed from a safe position outside the area that is affected by machine parts moved by the actuators.**
- **Make certain there are no persons, animals or objects in the danger zone.**

Note

If an actuator is turned on, the next or previous page cannot be called. (If necessary, turn the actuator off and repeat the process)

The actuator test is used to test actuators that have been attached to the machine for the “Cutting height” function.

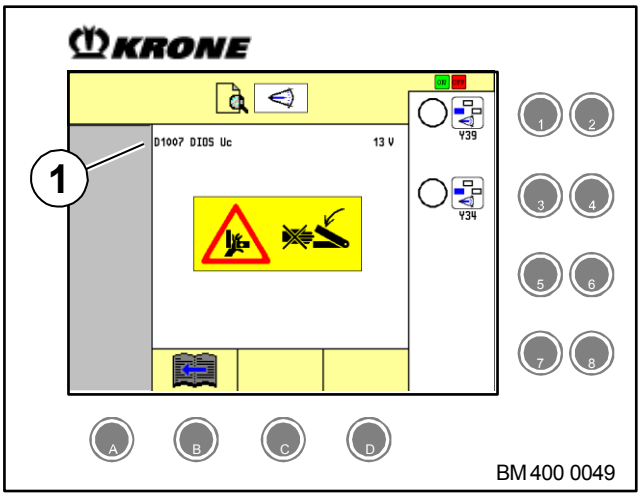


Fig. 135:

1. Shows required voltage for the actuators.

Possible status display of the selected actuator

○ Actuator turned off

● Actuator turned on

Note

The status displays described here apply to all Actuators related to cutting height.

Valve	Icon	Description	Switch on the actuator	Turn off the actuator
Y39		Cutting height – left lateral mowing unit 1	1	2
Y34		Cutting height – left lateral mowing unit 2	3	4

6.9.7 Menu 4-1-5 "Diagnostics of hydraulic auger hood"

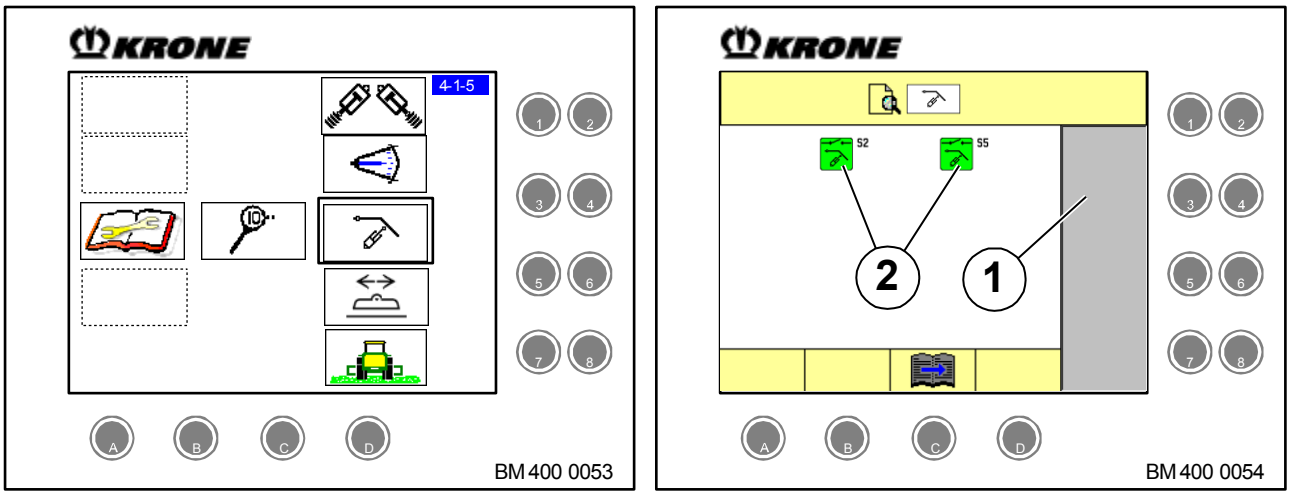


Fig. 136:

Call the "Diagnostics" main menu 4.

- Select menu 4-1-5 "Diagnostics of hydraulic auger hood" with the rotary potentiometer.
- Press the rotary potentiometer.

Diagnostics for the hydraulic auger hood appears.

The "Diagnostics of hydraulic auger hood" diagnostics menu is divided into 3 pages.

Page 1: Sensor Test

Page 2: Actuator test

Page 3: Actuator test

Menu control for pages 1 to 3

Note

For release conditions (1) not met see Section "Display of Release Conditions Not Met for Diagnostics"

For faults (1) see Section "Display of Possible Faults for Diagnostics"

- Press the C key to bring up the next page of the "Diagnostics of front axle" menu.
- Press the B key to bring up the previous page of the menu.
- Pressing the key on the rotary potentiometer takes you one menu level back.

Sensor test - hydraulic auger hoods (2) (page 1/3)

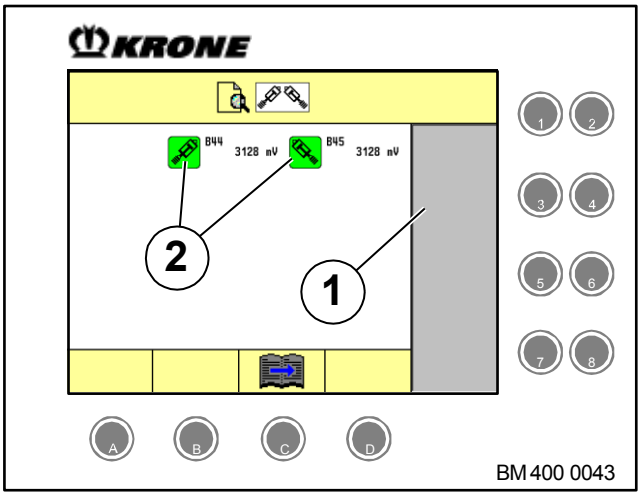


Fig. 137:

The sensor test is used to test sensors that have been attached to the machine for the hydraulic auger hoods function.

Sensor	Sensor OK green	Sensor inactive transparent	Description
B44			Hydraulic auger hoods left
B45			Hydraulic auger hoods right

Actuator test (page 2/3)

Danger!

Unexpected actions on the machine.

Effect: Danger to life or serious injuries.

- **Only persons familiar with the machine are permitted to perform the actuator test.**
- **The person performing the test must know which machine parts are moved by controlling the actuators.**
- **The actuator test must only be performed from a safe position outside the area that is affected by machine parts moved by the actuators.**
- **Make certain there are no persons, animals or objects in the danger zone.**

Note

If an actuator is turned on, the next or previous page cannot be called. (If necessary, turn the actuator off and repeat the process)

The actuator test is used to test actuators that have been attached to the machine for the "Hydraulic auger hoods" function.

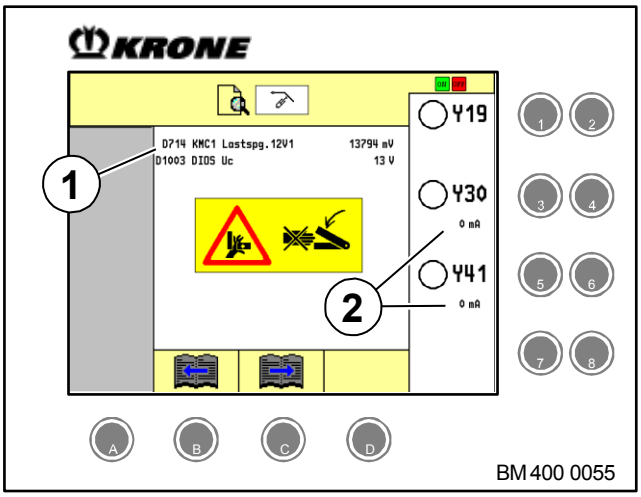


Fig. 138:

(1) Shows required voltage for the actuators.

(2) Shows current flow with the actuator activated.

Possible status display of the selected actuator

○ Actuator turned off

● Actuator turned on

Note

The status displays described here apply to all actuators related to valves (main valve, additional valve1 and additional valve2).

Valve	Icon	Description	Switch on the actuator	Turn off the actuator
Y19		Main valve	1	2
Y30		Additional valve 1	3	4
Y41		Additional valve 2	5	6

Actuator test (page 3/3)

Danger!

Unexpected actions on the machine.

Effect: Danger to life or serious injuries.

- **Only persons familiar with the machine are permitted to perform the actuator test.**
- **The person performing the test must know which machine parts are moved by controlling the actuators.**
- **The actuator test must only be performed from a safe position outside the area that is affected by machine parts moved by the actuators.**
- **Make certain there are no persons, animals or objects in the danger zone.**

Note

If an actuator is turned on, the next or previous page cannot be called. (If necessary, turn the actuator off and repeat the process)

The actuator test is used to test actuators that have been attached to the machine for the "Hydraulic auger hoods" function".

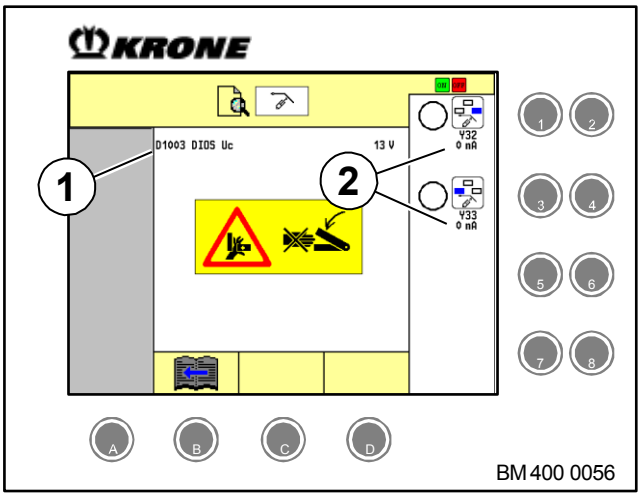


Fig. 139:

(3) Shows required voltage for the actuators.

(4) Shows current flow with the actuator activated.

Possible status display of the selected actuator

○ Actuator turned off

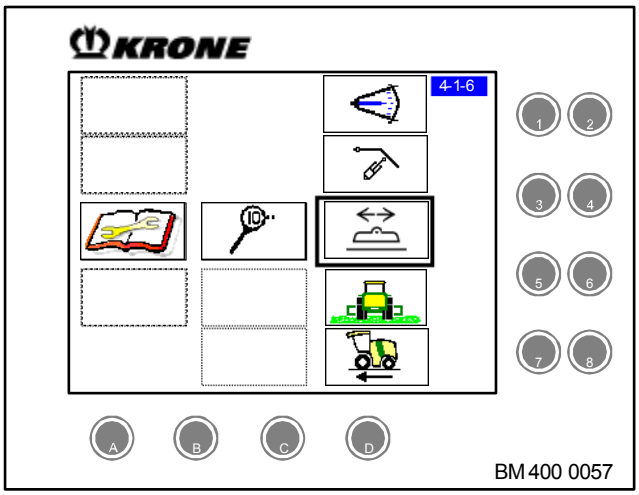
● Actuator turned on

Note

The status displays described above are valid for all actuators related to the hydraulic auger hood. .

Valve	Icon	Description	Switch on the actuator	Turn off the actuator
Y32		Auger hoods right	1	2
Y33		Auger hoods left	3	4

6.9.8 Menu 4-1-6 "Sideshift diagnostics"



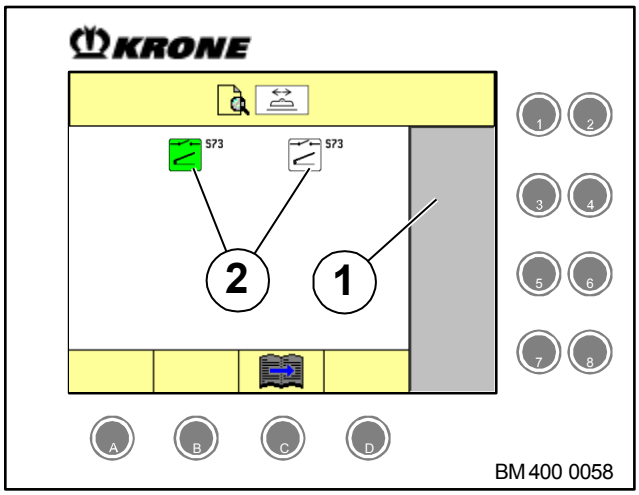


Fig. 140:

Call the "Diagnostics" main menu 4.

- Select menu 4-1-6 "Diagnostics sideshift" with the rotary potentiometer.
- Press the rotary potentiometer.

Sideshift diagnostics appears.

The "Sideshift" diagnostics menu is divided into 3 pages.

Page 1: Sensor Test

Page 2: Actuator test

Page 3: Actuator test

Menu control for pages 1 to 3

Note

For release conditions (1) not met see Section "Display of Release Conditions Not Met for Diagnostics"

For faults (1) see Section "Display of Possible Faults for Diagnostics"

- Press the C key to bring up the next page of the "Diagnostics of front axle" menu.
- Press the B key to bring up the previous page of the menu.
- Pressing the key on the rotary potentiometer takes you one menu level back.

Sensor Test – Sideshift (2) (page 1/3)

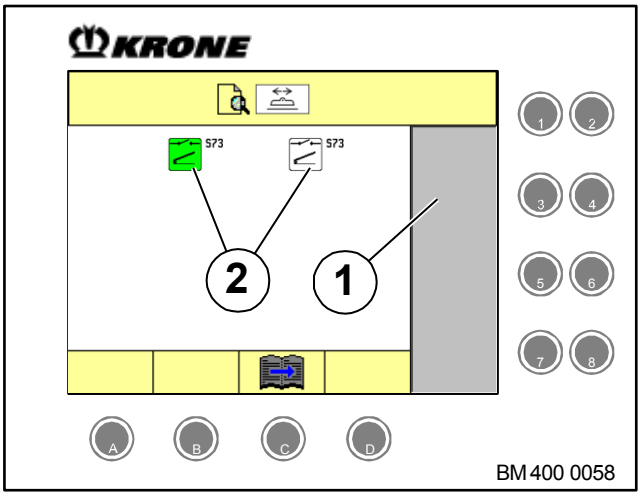


Fig. 141:

The sensor test is used to test sensors that have been attached to the machine for the sideshift function.

Sensor	Sensor OK green	Sensor inactive transparent	Description
S73			Hydraulic auger hoods left

Actuator test (page 2/3)

Danger!

Unexpected actions on the machine.

Effect: Danger to life or serious injuries.

- **Only persons familiar with the machine are permitted to perform the actuator test.**
- **The person performing the test must know which machine parts are moved by controlling the actuators.**
- **The actuator test must only be performed from a safe position outside the area that is affected by machine parts moved by the actuators.**
- **Make certain there are no persons, animals or objects in the danger zone.**

Note

If an actuator is turned on, the next or previous page cannot be called. (If necessary, turn the actuator off and repeat the process)

The actuator test is used to test actuators that have been attached to the machine for the “Sideshift” function.

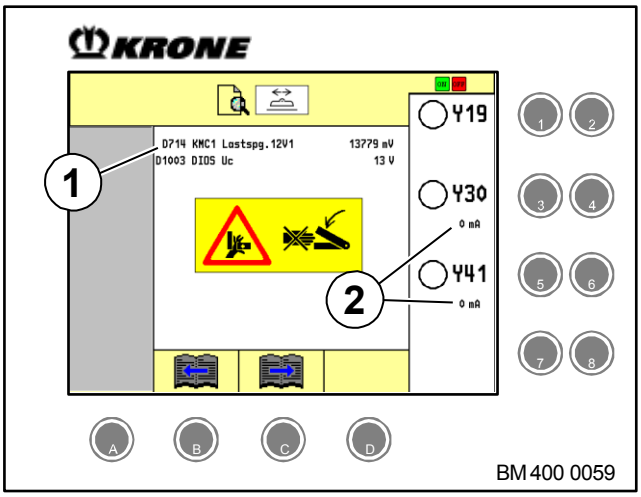


Fig. 142:

1. Shows required voltage for the actuators.
2. Shows current flow with the actuator activated.

Possible status display of the selected actuator

○ Actuator turned off

● Actuator turned on

Note

The status displays described here apply to all actuators related to valves (main valve, additional valve1 and additional valve2).

Valve	Icon	Description	Switch on the actuator	Turn off the actuator
Y19		Main valve	1	2
Y30		Additional valve 1	3	4
Y41		Additional valve 2	5	6

Actuator test (page 3/3)

Danger!

Unexpected actions on the machine.

Effect: Danger to life or serious injuries.

- **Only persons familiar with the machine are permitted to perform the actuator test.**
- **The person performing the test must know which machine parts are moved by controlling the actuators.**
- **The actuator test must only be performed from a safe position outside the area that is affected by machine parts moved by the actuators.**
- **Make certain there are no persons, animals or objects in the danger zone.**

Note

If an actuator is turned on, the next or previous page cannot be called. (If necessary, turn the actuator off and repeat the process)

The actuator test is used to test actuators that have been attached to the machine for the "Sideshift" function.

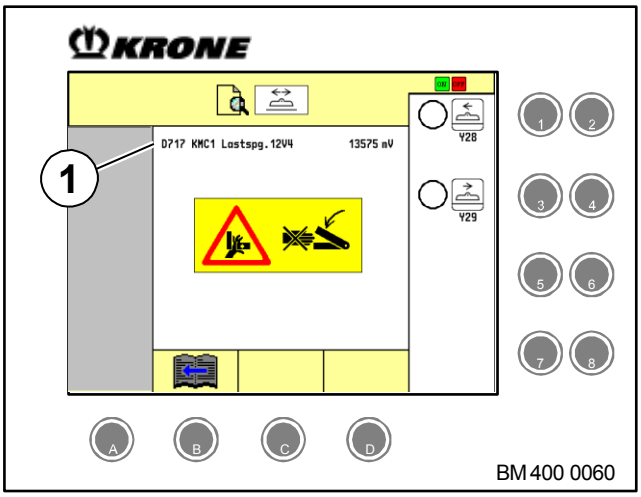


Fig. 143:

1. Shows required voltage for the actuators.

Possible status display of the selected actuator

○ Actuator turned off

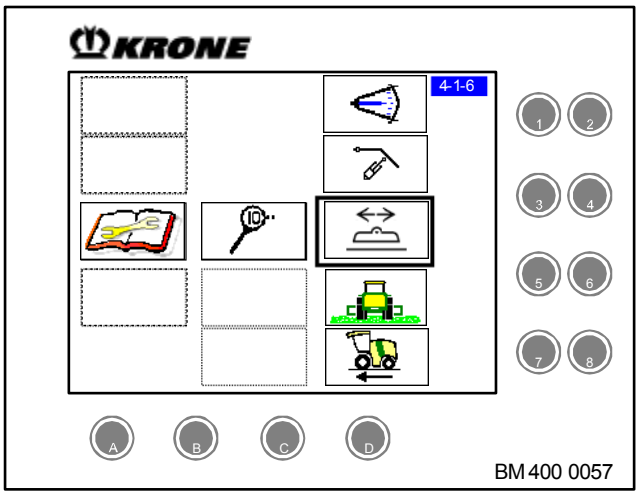
● Actuator turned on

Note

The status displays described above are valid for all actuators related to the sideshift.

Valve	Icon	Description	Turn on the actuator	Turn off the actuator
Y28		Sideshift left		
Y29		Sideshift right		

6.9.9 Menu 4-1-10 "Diagnostics Work"



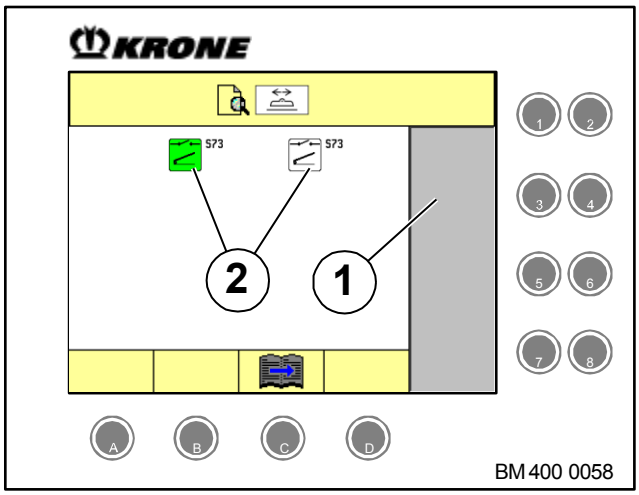


Fig. 144:

Call the "Diagnostics" main menu 4.

- Select menu 4-1-6 "Diagnostics work" with the rotary potentiometer.
- Press the rotary potentiometer.

Work diagnostics appears.

The "Work" diagnostics menu is divided into 6 pages.

Page 1: Sensor Test
Page 2: Sensor Test
Page 3: Actuator test
Page 4: Actuator test
Page 5: Actuator test
Page 6: Actuator test

Menu control for pages 1 to 6

Note

For release conditions (1) not met see Section "Display of Release Conditions Not Met for Diagnostics"

For faults (1) see Section "Display of Possible Faults for Diagnostics"

- Press the C key to bring up the next page of the "Diagnostics of front axle" menu.
- Press the B key to bring up the previous page of the menu.
- Pressing the key on the rotary potentiometer takes you one menu level back.

Sensor test work (2) (page 1/6)

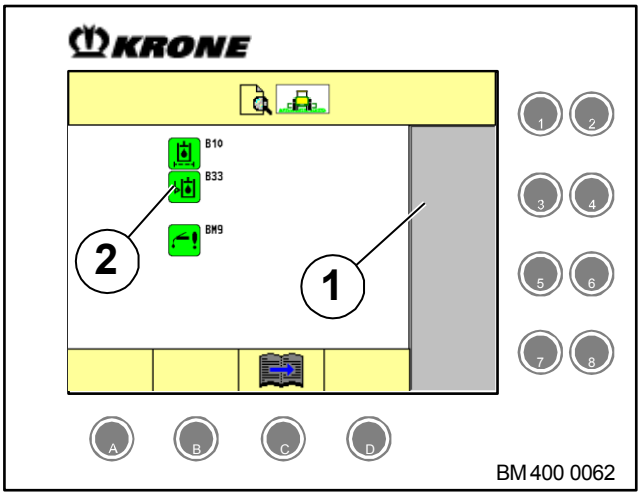


Fig. 145:

The sensor test is used to test sensors that have been attached to the machine for the work function.

Sensor	Sensor OK green	Sensor inactive transparent	Sensor not OK red	Description
B10				Suction return air filter
B33				Hydraulic tank filling level

Sensor test work (2) (page 2/6)

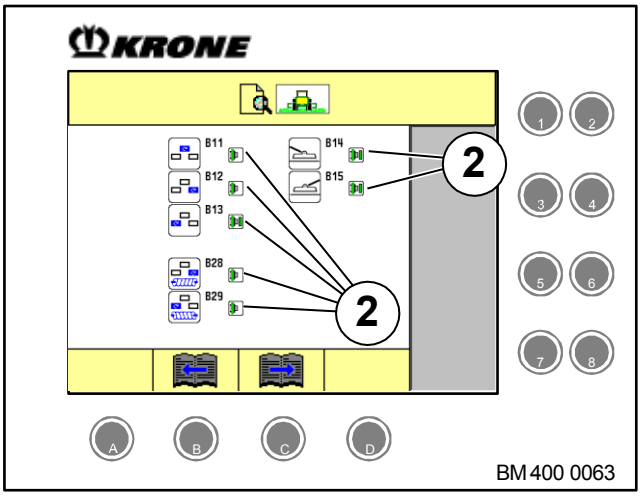


Fig. 146:

Sensor designation:

= Sensor B11 speed – front mowing unit

= Sensor B12 speed – right lateral mowing unit

= Sensor B13 speed – left lateral mowing unit

= Sensor B14 position – right lateral mowing unit

= Sensor B15 position – left lateral mowing unit

= Sensor B28 speed – right auger

= Sensor B29 speed – left auger

Status display of general sensors (2)

• = Broken cable sensor

• = Sensor alive

• = Sensor not alive

• = Sensor short circuit

Actuator test (page 3/6)

Danger!

Unexpected actions on the machine.

Effect: Danger to life or serious injuries.

- **Only persons familiar with the machine are permitted to perform the actuator test.**
- **The person performing the test must know which machine parts are moved by controlling the actuators.**
- **The actuator test must only be performed from a safe position outside the area that is affected by machine parts moved by the actuators.**
- **Make certain there are no persons, animals or objects in the danger zone.**

Note

If an actuator is turned on, the next or previous page cannot be called. (If necessary, turn the actuator off and repeat the process)

The actuator test is used to test actuators that have been attached to the machine for the "Work" function.

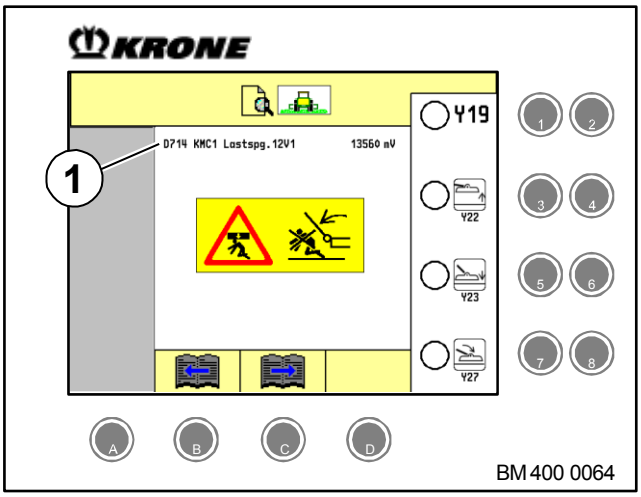


Fig. 147:

1. Shows required voltage for the actuators.

Possible status display of the selected actuator

○ Actuator turned off

● Actuator turned on

Note

The status displays described above are valid for all actuators related to the work.

Valve	Icon	Description	Turn on the actuator	Turn off the actuator
Y19		Main valve	1	2
Y22		Lateral mowing unit right lift	3	4
Y23		Lateral mowing unit right lower	5	6
Y27		Lateral mowing unit right fold down	7	8

Actuator test (page 4/6)

Danger!

Unexpected actions on the machine.

Effect: Danger to life or serious injuries.

- **Only persons familiar with the machine are permitted to perform the actuator test.**
- **The person performing the test must know which machine parts are moved by controlling the actuators.**
- **The actuator test must only be performed from a safe position outside the area that is affected by machine parts moved by the actuators.**
- **Make certain there are no persons, animals or objects in the danger zone.**

Note

If an actuator is turned on, the next or previous page cannot be called. (If necessary, turn the actuator off and repeat the process)

The actuator test is used to test actuators that have been attached to the machine for the "Work" function.

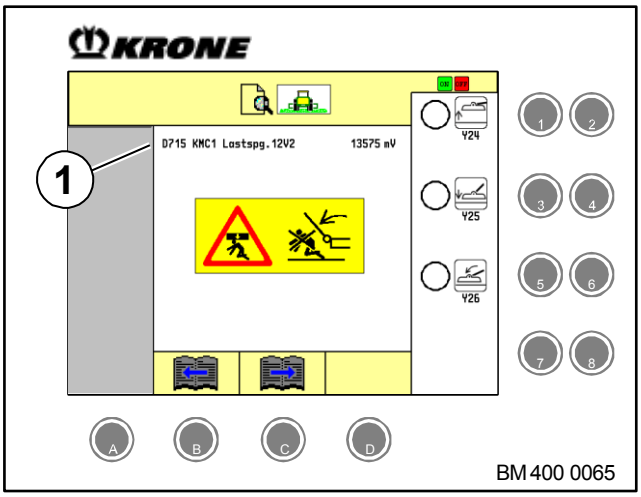


Fig. 148:

1. Shows required voltage for the actuators.

Possible status display of the selected actuator

○ Actuator turned off

● Actuator turned on

Note

The status displays described above are valid for all actuators related to the work.

Valve	Icon	Description	Turn on the actuator	Turn off the actuator
Y24		Lateral mowing unit left lift	1	2
Y25		Lateral mowing unit left lower	3	4
Y26		Lateral mowing unit left fold down	5	6

Actuator test (page 5/6)

Danger!

Unexpected actions on the machine.

Effect: Danger to life or serious injuries.

- **Only persons familiar with the machine are permitted to perform the actuator test.**
- **The person performing the test must know which machine parts are moved by controlling the actuators.**
- **The actuator test must only be performed from a safe position outside the area that is affected by machine parts moved by the actuators.**
- **Make certain there are no persons, animals or objects in the danger zone.**

Note

If an actuator is turned on, the next or previous page cannot be called. (If necessary, turn the actuator off and repeat the process)

The actuator test is used to test actuators that have been attached to the machine for the "Work" function.

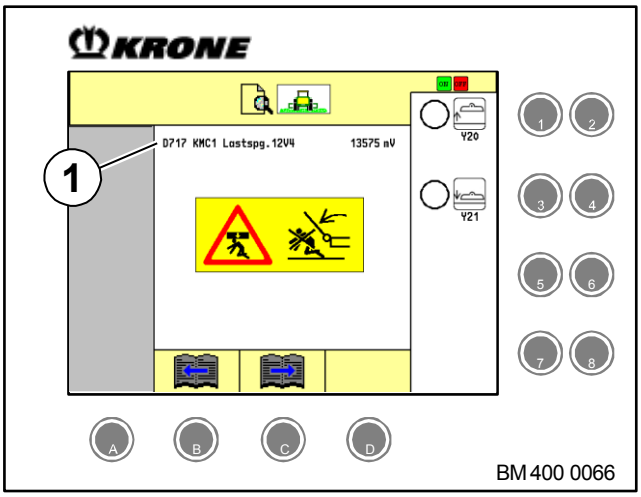


Fig. 149:

1. Shows required voltage for the actuators.

Possible status display of the selected actuator

○ Actuator turned off

● Actuator turned on

Note

The status displays described above are valid for all actuators related to the work.

Valve	Icon	Description	Turn on the actuator	Turn off the actuator
Y20		Lateral mowing unit left lift		
Y21		Lateral mowing unit left lower		

Actuator test (page 6/6)

Danger!

Unexpected actions on the machine.

Effect: Danger to life or serious injuries.

- **Only persons familiar with the machine are permitted to perform the actuator test.**
- **The person performing the test must know which machine parts are moved by controlling the actuators.**
- **The actuator test must only be performed from a safe position outside the area that is affected by machine parts moved by the actuators.**
- **Make certain there are no persons, animals or objects in the danger zone.**

Note

If an actuator is turned on, the next or previous page cannot be called. (If necessary, turn the actuator off and repeat the process)

The actuator test is used to test actuators that have been attached to the machine for the "Work" function.

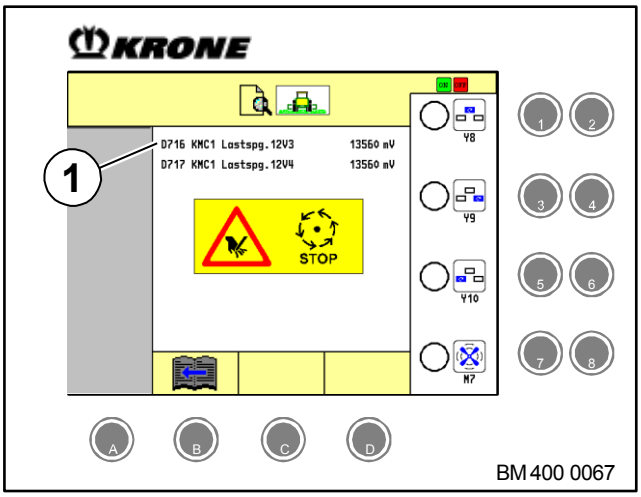


Fig. 150:

1. Shows required voltage for the actuators.

Possible status display of the selected actuator

○ Actuator turned off

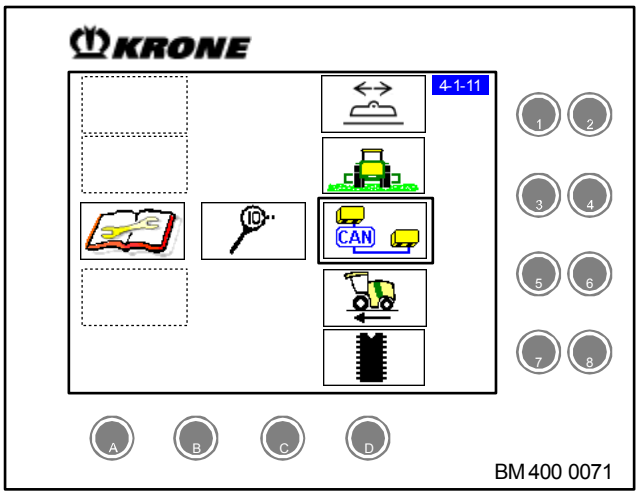
● Actuator turned on

Note

The status displays described above are valid for all actuators related to the work.

Valve	Icon	Description	Turn on the actuator	Turn off the actuator
Y8		Front mowing unit drive	1	2
Y9		Side mowing unit drive, right	3	4
Y10		Side mowing unit drive, left	5	6
M11		Compressor reversing fan	7	8

6.9.10 Menu 4-1-11 "CAN bus"



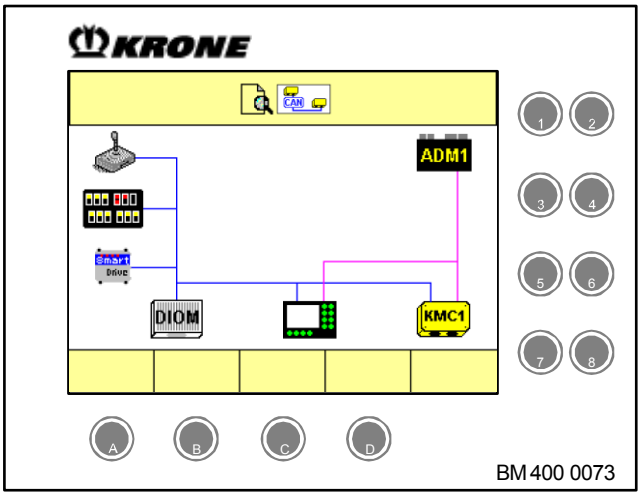


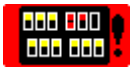
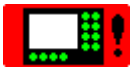
Fig. 151:

Call the "Diagnostics" main menu 4.

- Select menu 4-1-11 "CAN bus" with the rotary potentiometer.
- Press the rotary potentiometer.

Diagnostics CAN bus appears.

CAN bus user:

active	inactive or disconnected from CAN bus	Name
		Joystick
		CU
		SmartDrive
		DIOM
		Terminal
		KMC1
		ADM1

- Pressing the key on the rotary potentiometer takes you one menu level back.

6.9.11 Menu 4-1-12 "Travelling gear"

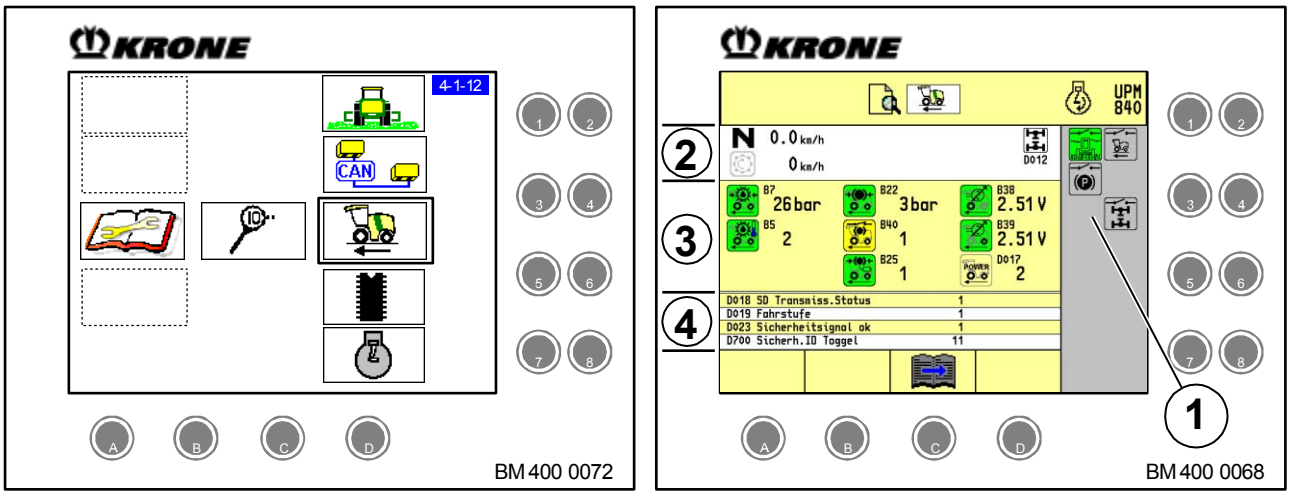


Fig. 152:

Call the "Diagnostics" main menu 4.

- Select menu 4-1-12 "Drive" with the rotary potentiometer.
- Press the rotary potentiometer.

Drive diagnostics appears.

The "Travelling Gear" diagnostics menu is divided into 3 pages.

Page 1: Sensor Test

Page 2: Actuator test

Page 3: Actuator test

Menu control for pages 1 to 3

Note

For release conditions (1) not met see Section "Display of Release Conditions Not Met for Diagnostics"

For faults (1) see Section "Display of Possible Faults for Diagnostics"

- Press the C key to bring up the next page of the "Diagnostics of front axle" menu.
- Press the B key to bring up the previous page of the menu.
- Pressing the key on the rotary potentiometer takes you one menu level back.

Travelling gear switch (1) (page 1/3)

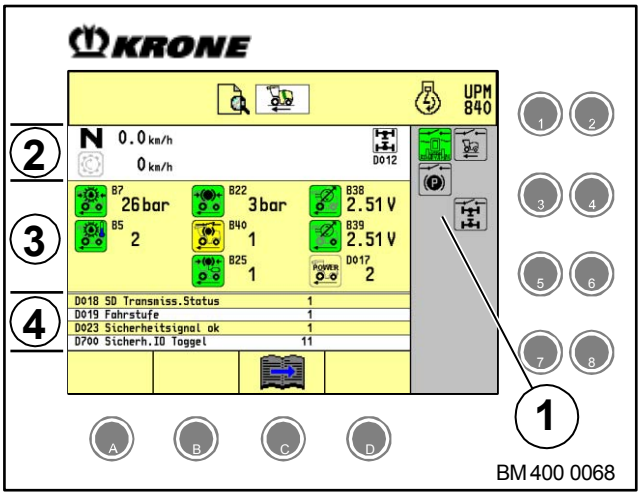


Fig. 153:

= Road/Field release switch not activated

= Road/Field release switch activated

= Release switch travelling gear not activated.

= Travelling gear release switch activated

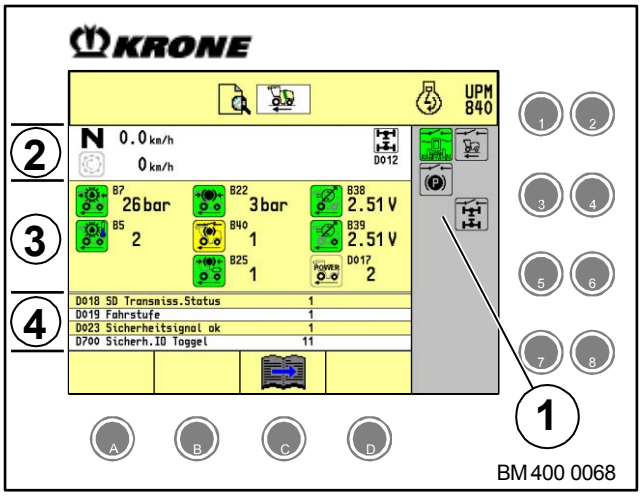
= Parking brake release switch not activated.

= Parking brake release switch activated

= Key axle separation not activated.

= Key axle separation activated

Travelling gear (2) (page 1/3)



- Direction of travel; the number after the symbol is the current travel speed.
  - = Forward travel
  - N = Neutral (stopped)
  - = Reverse travel

= Cruise control active; the number after the icon is the saved speed for Tempomat operation in km/h.

= Cruise control inactive

Type of drive

= Axle separation active (only possible in Field mode)

= Parking brake is applied

= Emergency mode; allows the driver to drive the vehicle out of the danger zone even if there are serious drive problems.

Drive sensor test (3) (page1/3)

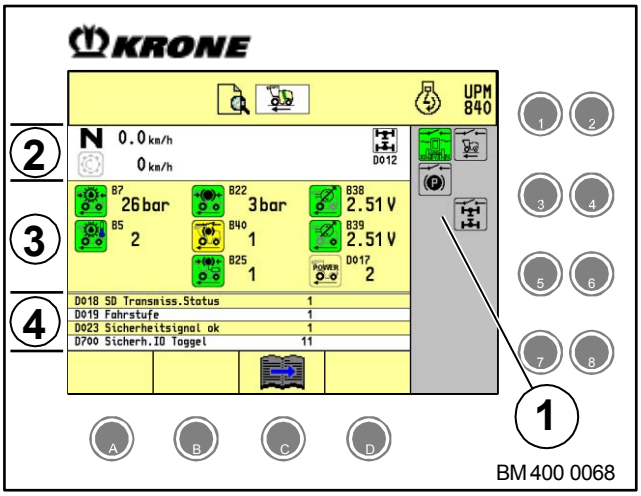


Fig. 154:

The sensor test is used to test sensors that have been attached to the machine for the travelling gear function.

Sensor	Sensor OK green	Sensor not OK red	Sensor unknown transparent	Description
B5				Flush valve temperature
B7				High pressure
B22				Braking pressure
B25				Brake tank pressure
B38				Pivoting angle pump front axle
B39				Pivoting angle pump, rear axle

Sensor	Switch activated green	Switch not activated yellow	Switch unknown transparent	Description
B40				Brake pedal switch

	Yellow active	Transparent inactive	Description
D 017	POWER	POWER	Power limitation

Drive sensor test (3) (page1/3)

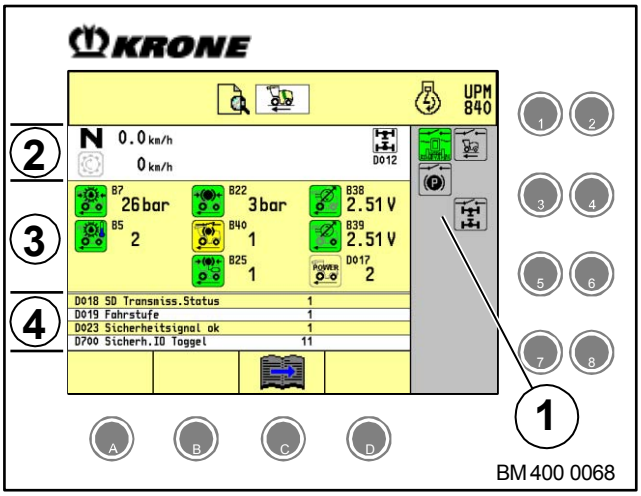


Fig. 155:

D018 = SD transmiss. Status (1 OK) (2 not OK)
D019 = drive level (1= drive level 1) (2=drive level 2)
D023 = Safety signal (1 OK) (2 not OK)
D700 = Saf. IO Toggle analogue val. to digital

Actuator test (page 2/3)

Danger!

Unexpected actions on the machine.

Effect: Danger to life or serious injuries.

- **Only persons familiar with the machine are permitted to perform the actuator test.**
- **The person performing the test must know which machine parts are moved by controlling the actuators.**
- **The actuator test must only be performed from a safe position outside the area that is affected by machine parts moved by the actuators.**
- **Make certain there are no persons, animals or objects in the danger zone.**

Note

If an actuator is turned on, the next or previous page cannot be called. (If necessary, turn the actuator off and repeat the process)

The actuator test is used to test actuators that have been attached to the machine for the “Travelling gear” function.

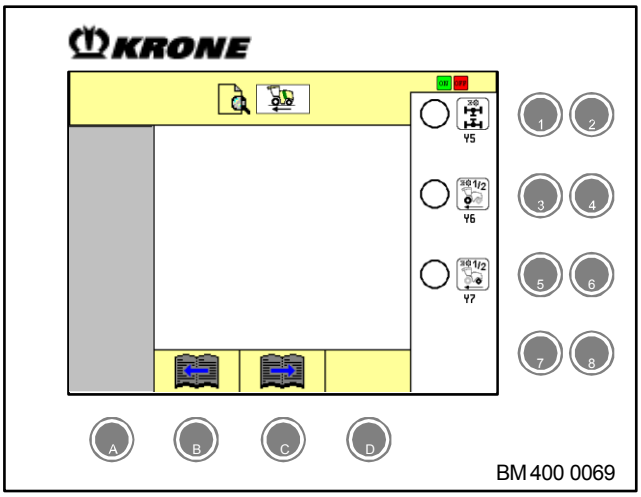


Fig. 156:

Possible status display of the selected actuator

○ Actuator turned off

● Actuator turned on

Note

The status displays described above are valid for all actuators related to the travelling gear.

Valve	Icon	Description	Turn on the actuator	Turn off the actuator
Y5		Axle separation	1	2
Y6	1/2	1/2 absorption volume front axle	3	4
Y7	1/2	1/2 absorption volume rear axle	5	6

Actuator test (page 3/3)

Danger!

Unexpected actions on the machine.

Effect: Danger to life or serious injuries.

- **Only persons familiar with the machine are permitted to perform the actuator test.**
- **The person performing the test must know which machine parts are moved by controlling the actuators.**
- **The actuator test must only be performed from a safe position outside the area that is affected by machine parts moved by the actuators.**
- **Make certain there are no persons, animals or objects in the danger zone.**

Note

If an actuator is turned on, the next or previous page cannot be called. (If necessary, turn the actuator off and repeat the process)

The actuator test is used to test actuators that have been attached to the machine for the “Travelling gear” function.

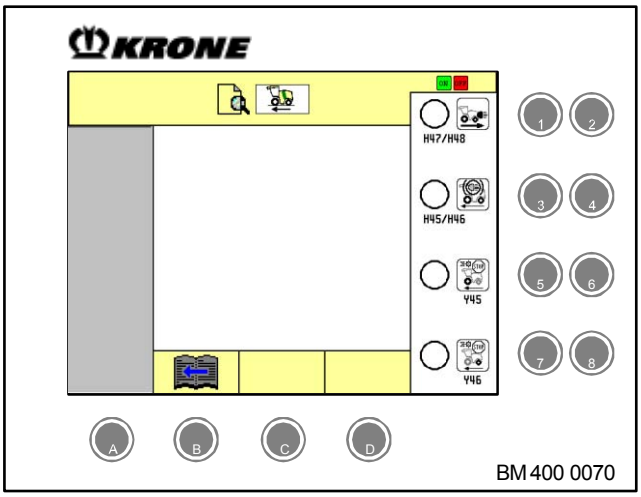


Fig. 157:

Possible status display of the selected actuator

○ Actuator turned off

● Actuator turned on

Note

The status displays described above are valid for all actuators related to the travelling gear.

Valve	Icon	Description	Turn on the actuator	Turn off the actuator
		Brake light	1	2
		reversing lights	3	4
		Stop valve front axle	5	6
		Stop valve rear axle	7	8

6.9.12 Menu 4-1-13 "Electronics"

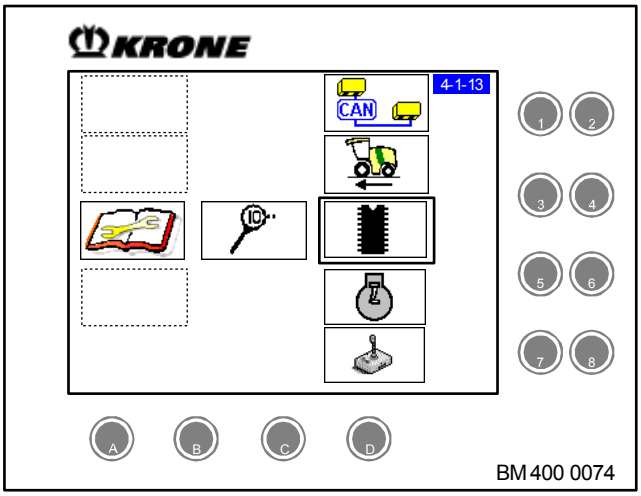


Fig. 158:

Call the "Diagnostics" main menu 4.

- Select menu 4-1-13 "Electronics" with the rotary potentiometer.
- Press the rotary potentiometer.

Electronics diagnostics appears.

Note

For release conditions (1) not met see Section "Display of Release Conditions Not Met for Diagnostics"

For faults (1) see Section "Display of Possible Faults for Diagnostics"

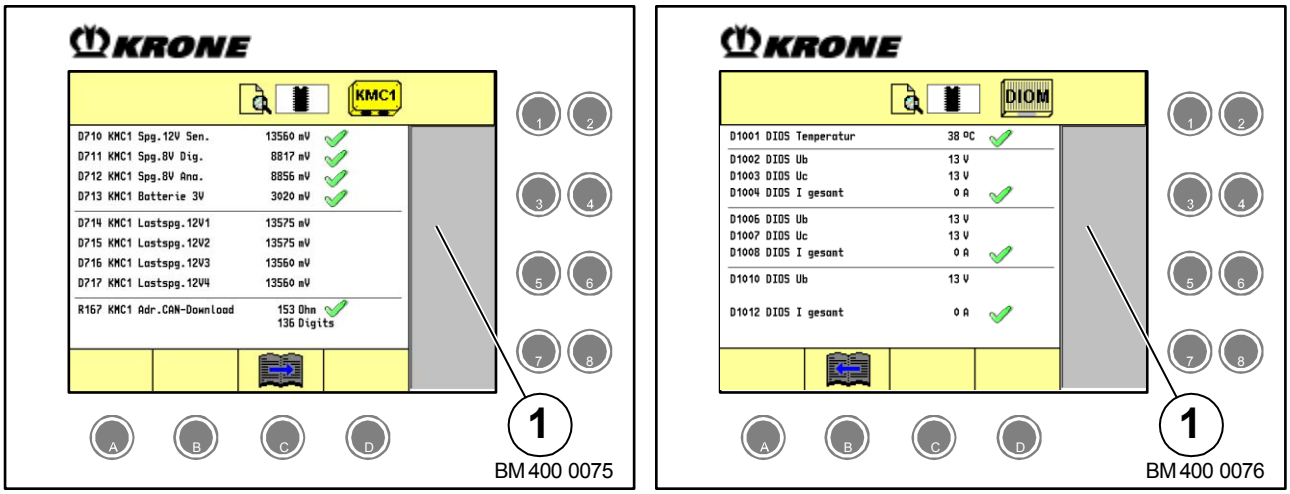


Fig. 159:

- The symbol identifies diagnostic values that lie within a valid range.
- The symbol identifies diagnostic values that do not lie within a valid range.
- To scroll forward, use the key. To scroll backward, use the key.

• Pressing the key on the rotary potentiometer takes you back one menu level

6.9.13 Menu 4-1-14 "Diesel engine"

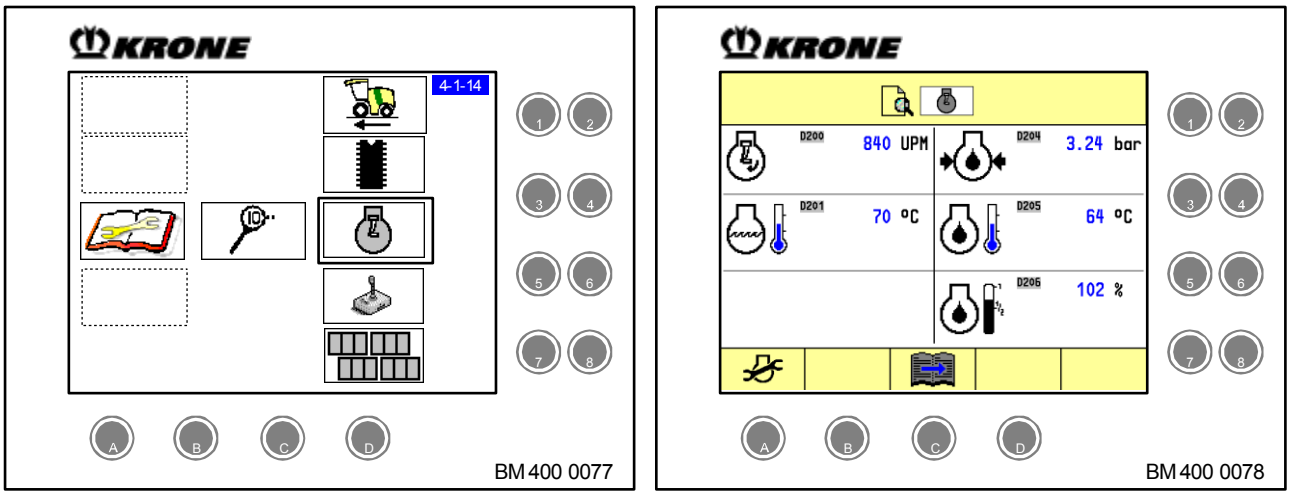


Fig. 160:

Call the "Diagnostics" main menu 4.

- Select menu 4-1-14 "Diesel engine" with the rotary potentiometer.
- Press the rotary potentiometer.

"Diesel engine Diagnostics" appears.

Diesel engine page 1

= Engine speed

= Engine cooling water temperature

= Engine oil pressure

= Engine oil temperature

= Engine oil level

- Activating the C key for causes the next page to be displayed.
- Activating the A key for causes the next maintenance interval to be displayed.

Diesel engine page 2

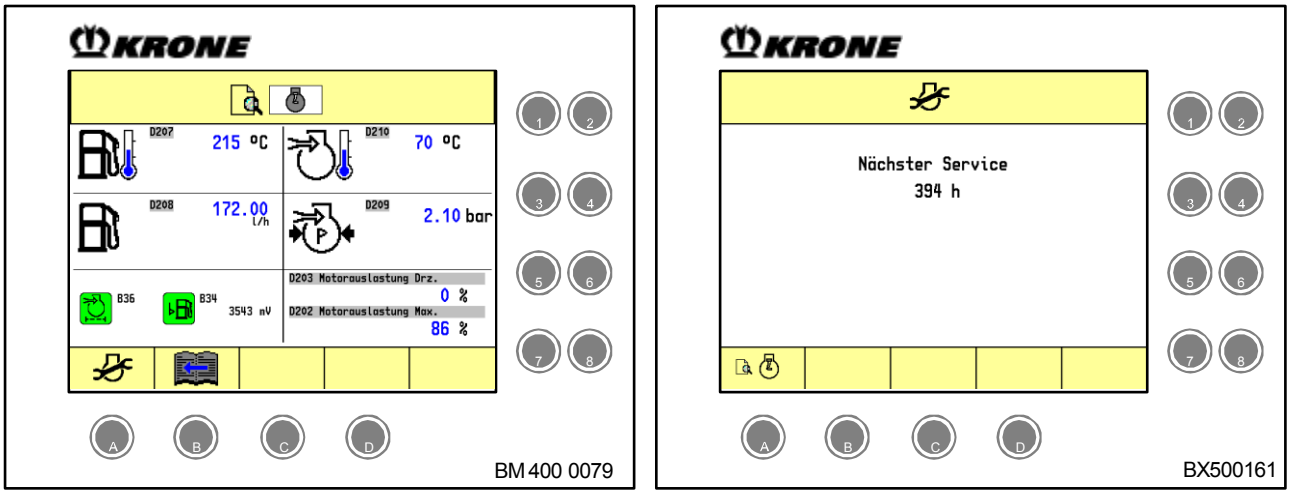


Fig. 161:

= Diesel tank fuel level

= Diesel fuel consumption

= Temperature of air intake

= Engine oil temperature

- Maximum engine capacity
- Engine capacity, speed

Sensor	Sensor OK green	Sensor not OK red	Description
B34			Diesel tank fuel level
B36			Air intake

- Activating the A key for causes the diesel engine Diagnostics to be displayed.
- Activating the B for causes the previous page to be displayed.
- Pressing the key on the rotary potentiometer takes you one menu level back.

6.9.14 Menu 4-1-15 "Joystick"

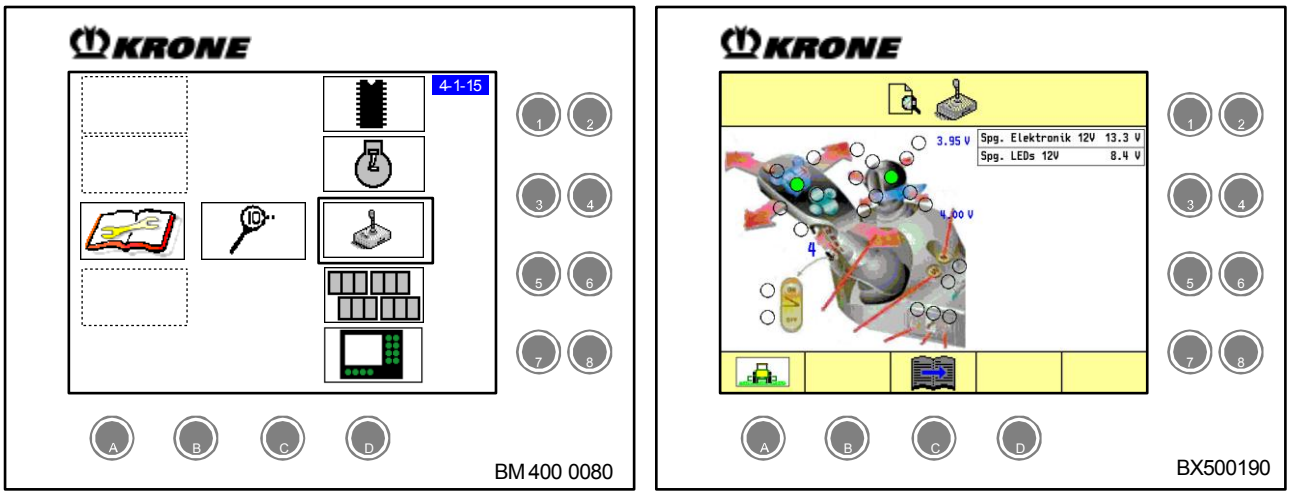


Fig. 162:

The key functions of the joystick can be checked in the "Joystick" Diagnostics menu.

Note

When bringing up the "Joystick" Diagnostics menu, the diesel engine must be stopped. No functions are performed when the joystick is activated in the "Joystick" Diagnostics menu.

Call the "Diagnostics" main menu 4.

- Select menu 4-1-15 "Joystick" with the rotary potentiometer.
- Press the rotary potentiometer.

"Joystick Diagnostics" appears.

- Pressing the key on the rotary potentiometer takes you one menu level back.

Menu control:

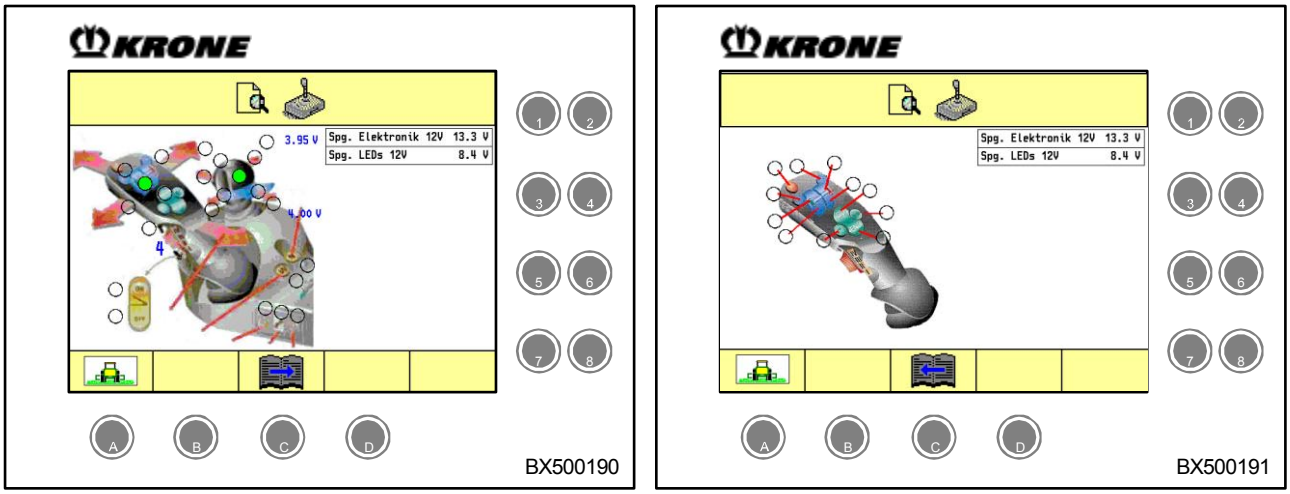


Fig. 163:

- Pressing the A key under the softkey brings up the "Work" menu.
- Press the C key under the softkey to bring up the next page of the "Joystick" menu.
- Press the C key under the softkey to bring up the next previous of the "Joystick" menu.

A representation of the joystick appears in the display. If a function is activated on the joystick, the status of the function that is performed appears in the display.

Possible status display of the activated key

Key not activated

Key activated

Broken cable

Short circuit

6.9.15 Menu 4-1-16 "Control unit console"

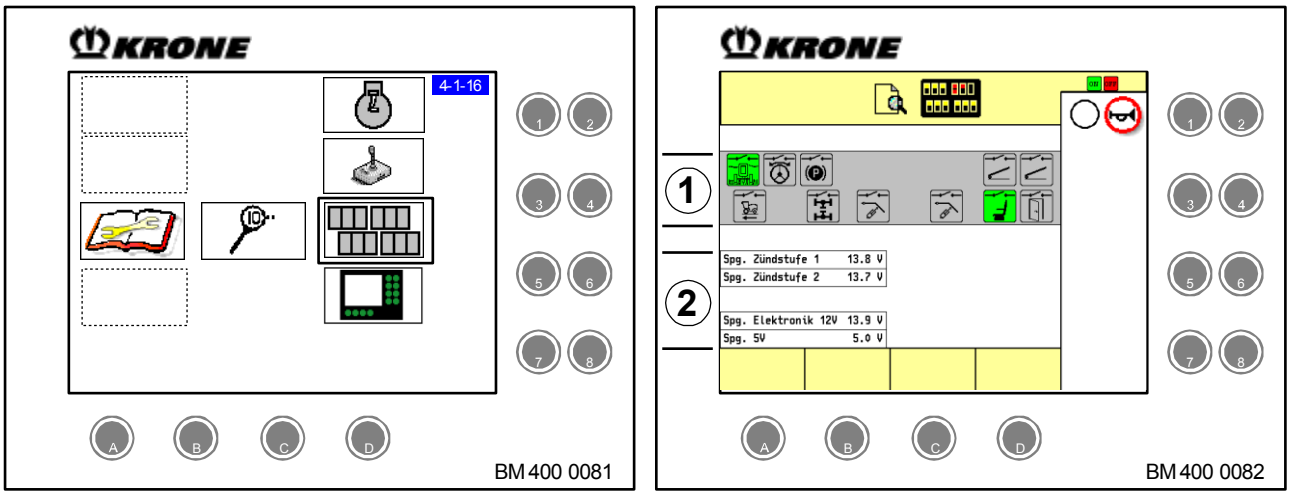


Fig. 164:

Both the release switches and the keys on the console can be checked for their functionality in the "Control unit console" Diagnostics menu.

Note

When bringing up the "Control unit console" Diagnostics menu, the diesel engine must be stopped. No functions are performed in the "Control unit console" Diagnostics menu when the release switches or keys are activated.

Call the "Diagnostics" main menu 4.

- Select menu 4-1-16 "Control unit console" with the rotary potentiometer.
- Press the rotary potentiometer.

Control unit console diagnostics appears.

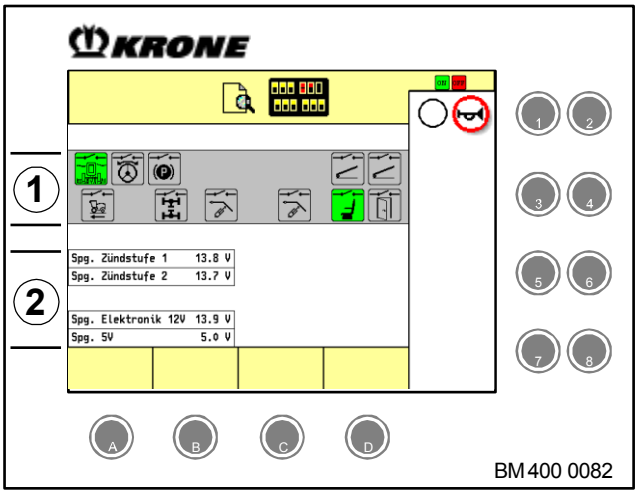


Fig. 165:

Release switch (1)

Activated	Inactive	Release switch
		Road/field
		Autopilot
		Parking brake
		Foot pedal
		Travelling gear
		Axle separation
		Swath hood
		Seat switch
		Door switch

Display of voltages (2)

Display (voltage – ignition stage 1)

Display (voltage – ignition stage 2)

Display (voltage – electronics)

Display (fixed voltage regulator)

6.9.16 Menu 4-1-17 "Display"

The "Display" diagnostics menu is used to check key functions , the rotary potentiometer and the key next to the rotary potentiometer.

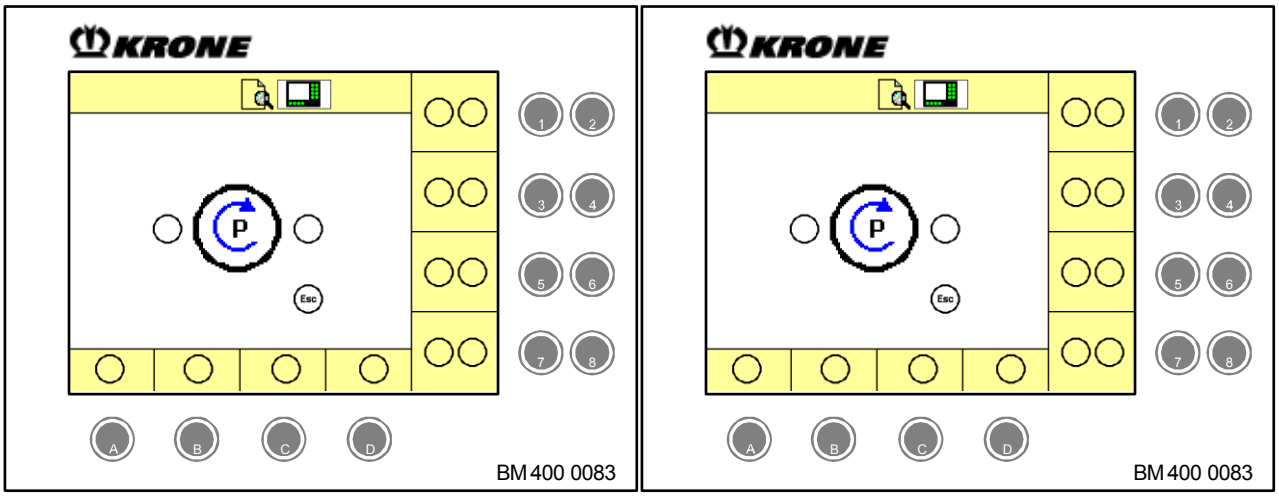


Fig. 166:

Note

When bringing up the "Display" Diagnostics menu, the diesel engine must be stopped. No functions are performed when keys are activated in the "Display" Diagnostics menu.

Call the "Diagnostics" main menu 4.

- Select menu 4-1-17 "Display" with the rotary potentiometer.
- Press the rotary potentiometer.

"Display diagnostics" appears.

A representation of the display appears in the display. If a function is activated on the display, the status of the function that is performed appears in the display.

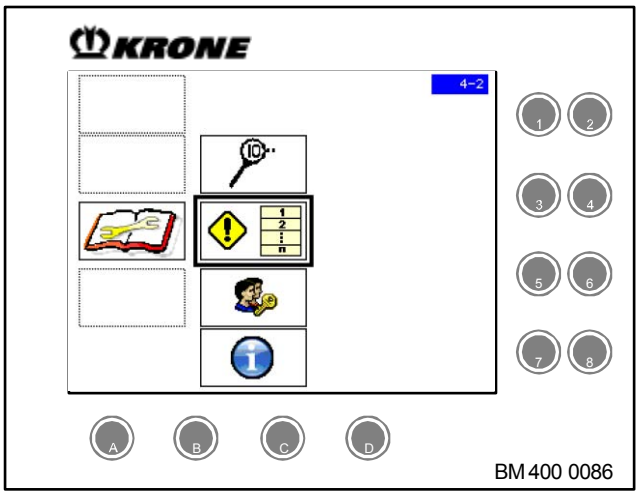
Possible status display of the activated key

Key not activated

Key activated

- Pressing the key on the rotary potentiometer takes you one menu level back.

6.10 Menu 4-2 "Error list"



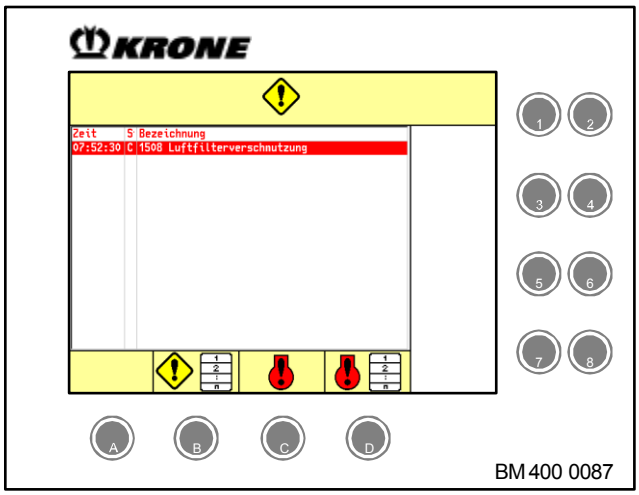


Fig. 167:

The main menu level is active.

- Select main menu 4-2 with the rotary potentiometer.
- Press the rotary potentiometer.

The "Error list" appears.

= Current error

= Fault storage

= Current error, diesel engine

= Error storage, diesel engine

Current errors

The display shows the fault list with the current faults. The time, status, error number and designation are shown.

- Status
  C = Error has come (Come)
  G = Error has gone (Gone)
  A = Error acknowledged

Error storage

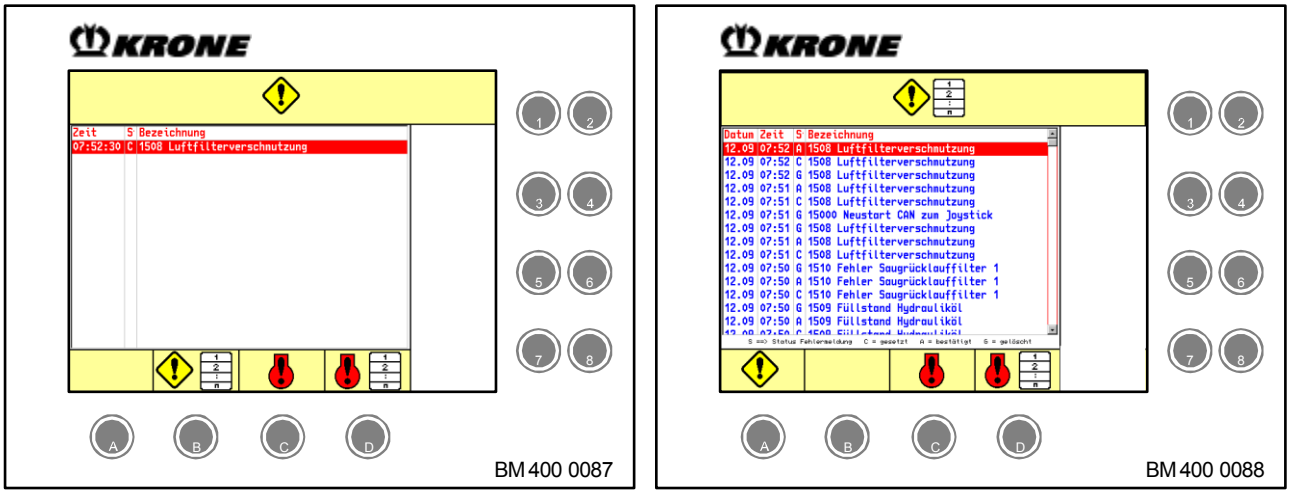
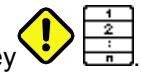

KRONE
Zeit S Bezeichnung
07:52:30 C 1508 Luftfilterverschnutzung
1 2 3 4 5 6 7 8
A B C D
BM 400 0087
KRONE
Datum Zeit S Bezeichnung
12.09 07:52 A 1508 Luftfilterverschmutzung
12.09 07:52 C 1508 Luftfilterverschmutzung
12.09 07:52 G 1508 Luftfilterverschmutzung
12.09 07:51 A 1508 Luftfilterverschmutzung
12.09 07:51 C 1508 Luftfilterverschmutzung
12.09 07:51 G 15000 Neustart CAN zum Joystick
12.09 07:51 G 1508 Luftfilterverschmutzung
12.09 07:51 A 1508 Luftfilterverschmutzung
12.09 07:51 C 1508 Luftfilterverschmutzung
12.09 07:50 G 1510 Fehler Saugrücklauffilter 1
12.09 07:50 A 1510 Fehler Saugrücklauffilter 1
12.09 07:50 C 1510 Fehler Saugrücklauffilter 1
12.09 07:50 G 1509 Füllstand Hydrauliköl
12.09 07:50 A 1509 Füllstand Hydrauliköl
1 2 3 4 5 6 7 8
A B C D
BM 400 0088

Fig. 168:

- To display error storage, activate the B key under the softkey  .

Error storage is arranged chronologically. The date, time, status, error numbers, and designation are shown.

- Status
  C = Error has come (Come)
  G = Error has gone (Gone)
  A = Error acknowledged

Current diesel engine errors

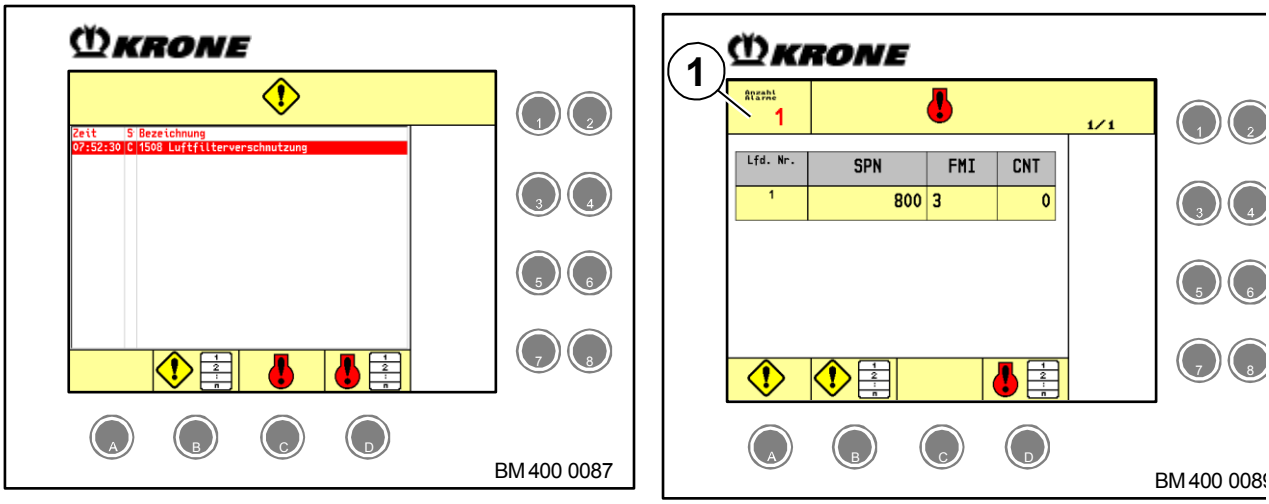


Fig. 169:

- To display current errors of the diesel engine, press the C key under the softkey.

The display shows the error list with the current errors of the diesel engine. Error codes are displayed with a sequential number.

Menu field (1) indicates the number of alarms present.

Diesel engine error storage

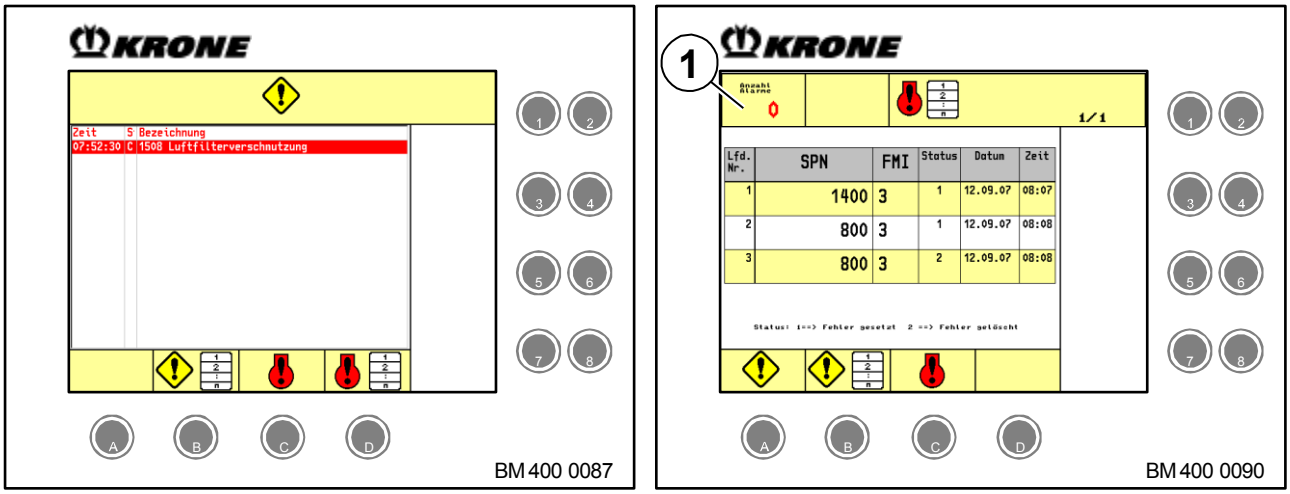

KRONE
Zeit S Bezeichnung
07:52:30 C 150B Luftfilterverschmutzung
1 2 3 4 5 6 7 8
A B C D
BM 400 0087
KRONE
1
Anzahl Alarme
0
1/1
Lfd. Nr. SPN FMI Status Datum Zeit
1 1400 3 1 12.09.07 08:07
2 800 3 1 12.09.07 08:08
3 800 3 2 12.09.07 08:08
Status: 1==> Fehler gesetzt 2 ==> Fehler gelöscht
1 2 3 4 5 6 7 8
A B C D
BM 400 0090

Fig. 170:

- To display diesel engine error storage, activate the D key under the softkey .

The display shows the error storage of the diesel engine. Error codes, the status, date and time are indicated with a sequential number.

Menu field (1) indicates the number of alarms present.

- **Status**

  1 = Error set

  2 = Error deleted

- You can use the 7 for to scroll to the end of the list and the 8 key for to scroll up.
- To display current errors, use the A key under the softkey.
- Pressing the key on the rotary potentiometer takes you one menu level back.

6.11 Menu 4-3 "Service level"

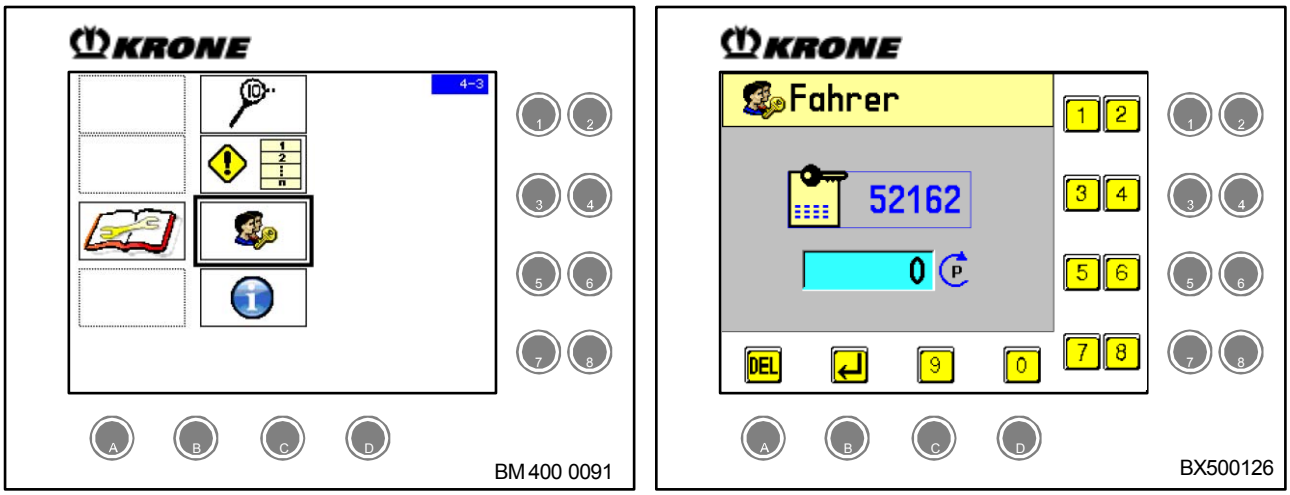


Fig. 171:

The main menu level is active.

- Select main menu 4-3 with the rotary potentiometer.
- Press the rotary potentiometer.

The "Service level" is protected by a password and is accessible only to the Krone service staff.

- Pressing the key on the rotary potentiometer takes you one menu level back.

6.12 Menu 4-4 "Information"

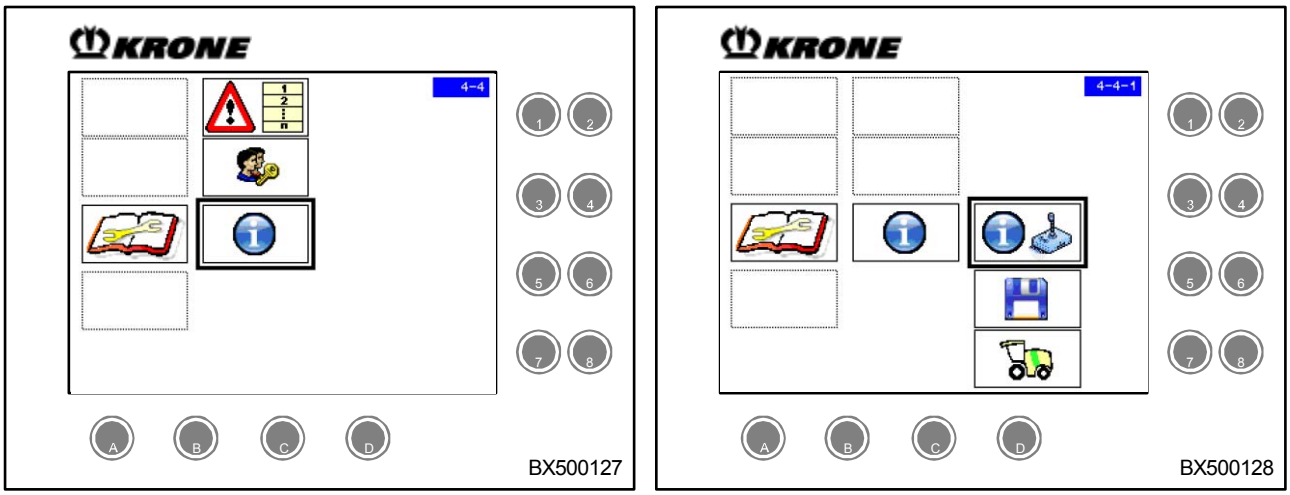


Fig. 172:

The main menu level is active.

- Select main menu 4-4 with the rotary potentiometer.
- Press the rotary potentiometer.

The display shows menu level 4-4 "Information".

The main menu, "Settings", is divided up into three menus:

= Menu 4-4-1 "Joystick"

= Menu 4-4-2 "Software"

= Menu 4-4-3 "Machine"

- Pressing the key on the rotary potentiometer takes you one menu level back.

6.12.1 Menu 4-4-1 "Joystick"

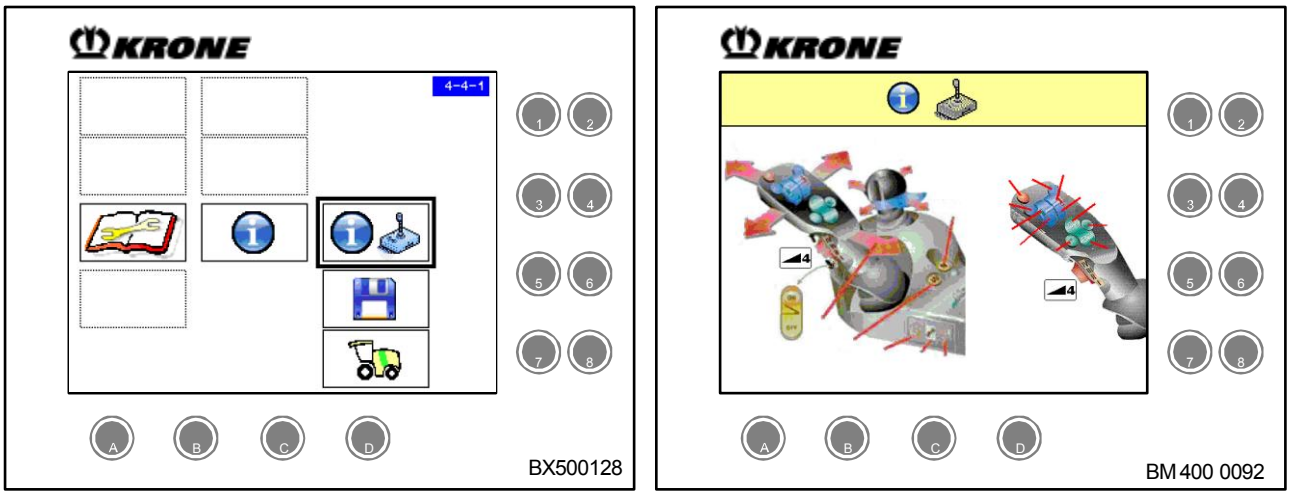


Fig. 173:

The main menu "Information" is active.

- Select menu 4-4-1 "Joystick" with the rotary potentiometer.
- Press the rotary potentiometer.

"Joystick information" appears.

- Pressing the key on the rotary potentiometer takes you one menu level back.

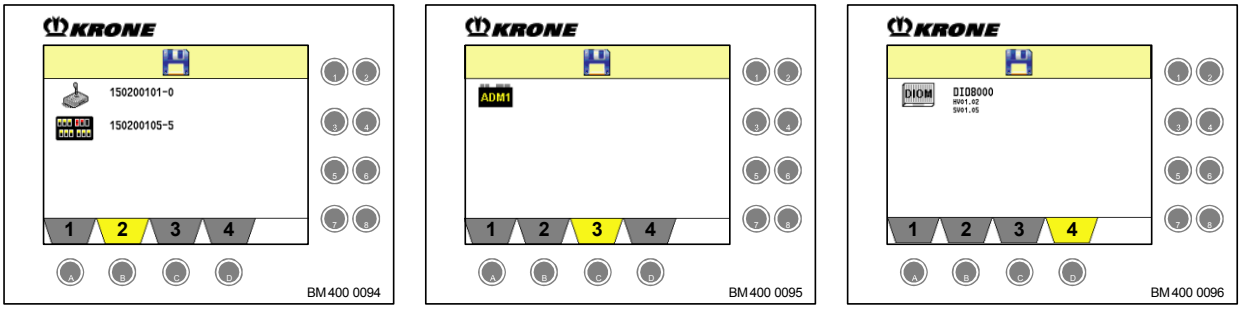


Fig. 174:

Page 2

= Joystick

= CU

- Activating the C key or turning the rotary potentiometer causes the fourth page to be displayed on the rotary potentiometer.

Page 3

= ADM1

- Activating the D key or turning the rotary potentiometer causes the fourth page to be displayed on the rotary potentiometer.

Page 4

= DIOM

- Activating the A key or turning the rotary potentiometer causes the first page to be displayed on the rotary potentiometer.
- Pressing the key on the rotary potentiometer takes you one menu level back.

6.12.2 Menu 4-4-3 "Machine"

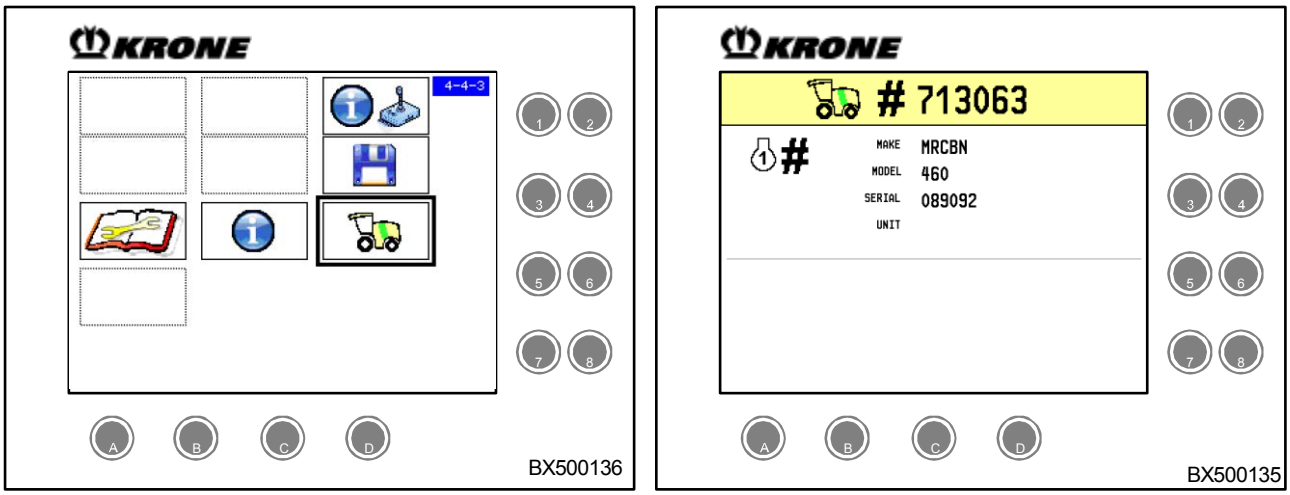


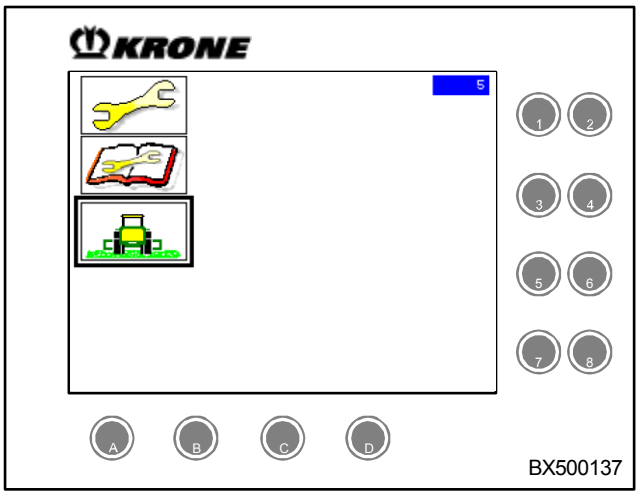
Fig. 175:

The main menu "Information" is active.

- Select menu 4-4-3 "Machine" with the rotary potentiometer.
- Press the rotary potentiometer.

"Machine information" appears. The display shows machine information.

6.13 Menu 5 "Basic Screen"



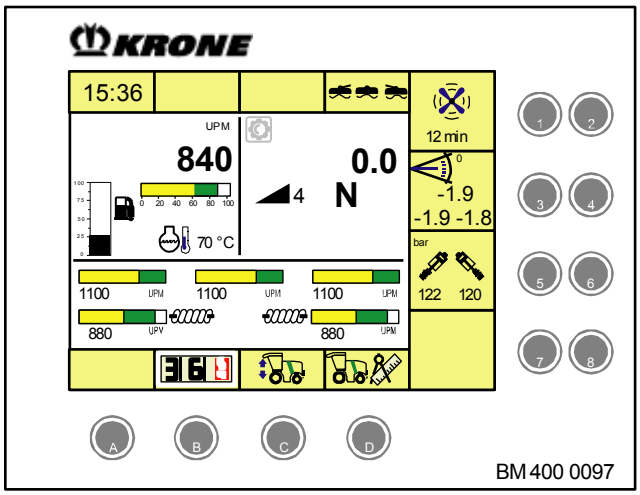


Fig. 176:

The main menu is active.

- Select menu 5 "Machine" with the rotary potentiometer.
- Press the rotary potentiometer.

The "Basic screen" is displayed.

6.13.1 Error message

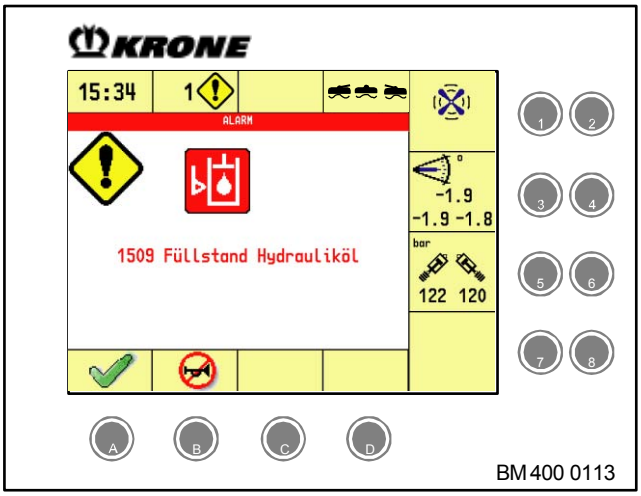


Fig. 177:

If an error occurs on the machine, the error message appears in the display. The error message and the fault code are displayed.

- The error message can be confirmed with the A key under softkey ✓.
- The acoustic signal can be turned off with the B key under the softkey 🔇.

Note

For a list of error messages, error description and possible cause of error and remedy of error, see Appendix A – Error Messages.

6.13.2 Information message

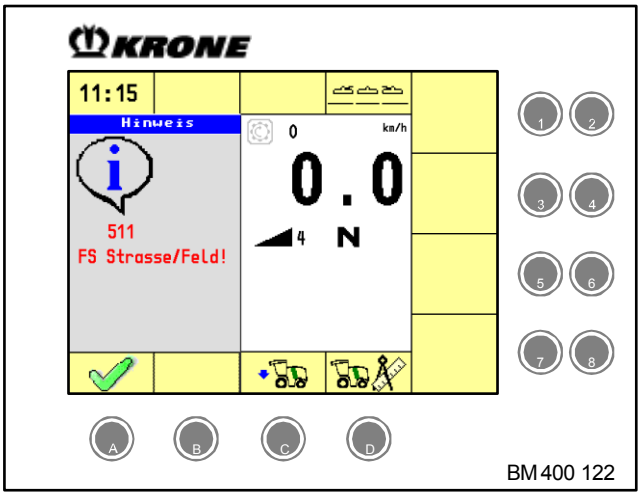


Fig. 178:

If one or several conditions are not met to carry out an action, the information message will be displayed in the information section of settings (IV). The information message and the information code are displayed.

Acknowledging the information message

The error message can be confirmed with the

key under softkey .

7 Commissioning

Danger!

Missing guard cloths

Effect: Danger to life, serious injuries or serious damage to the machine.

- **The machine may be taken into operation only after all the safety devices have been installed.**

7.1 Fitting the guard cloths

The lateral mowing units must be folded down to be able to install the guard cloths.

7.2 Folding Down Lateral Mowing Units

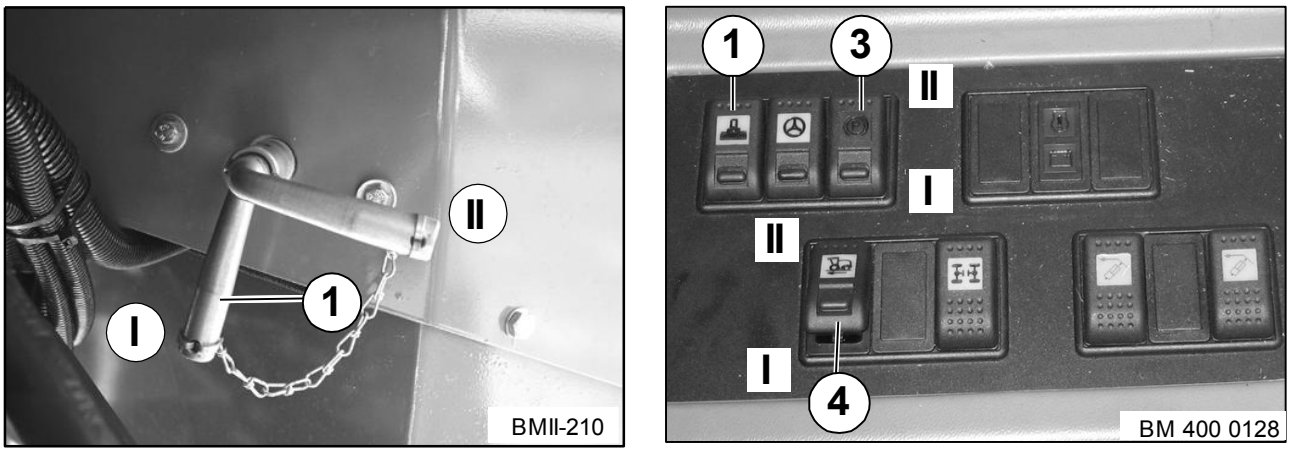


Fig. 179:

Prerequisites:

- The main battery switch (1) must be in position I (closed).
- Release switch (3) "Parking brake" must be in position II (engaged).
- Release switch (4) "Travelling gear" must be in position I (off).
- Starting the engine.
- Release switch (1) "Road/Field" must be in position II (Field mode).

Danger!

Lowering mowing unit into working position

Effect: Danger to life, injuries or damage to the machine.

- **Do not lower the mowing units until you are absolutely sure that neither persons, animals nor objects are in the swivel range of the mowing units.**

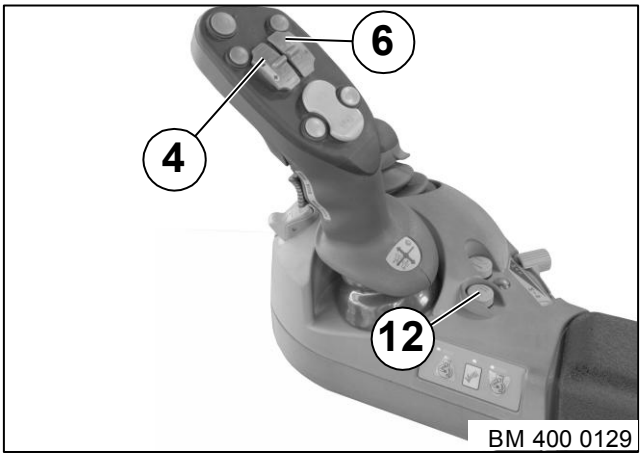


Fig. 180:

- Using the (4, 6) keys with (12) key pressed on the multi-function lever, lower the lateral mowing unit from transport position to headland position.
- Press the (4,6) keys on the multi-function lever again to lower the lateral mowing units from headland position to working position.
- Switch off the engine and remove the ignition key.

7.2.1 Description of Installation

Danger!

Accidental start-up of machine and rolling.

Effect: Danger to life, injuries or damage to the machine.

- **Switch off the engine and remove the ignition key.**
- **Secure the machine against the possibility of rolling back.**

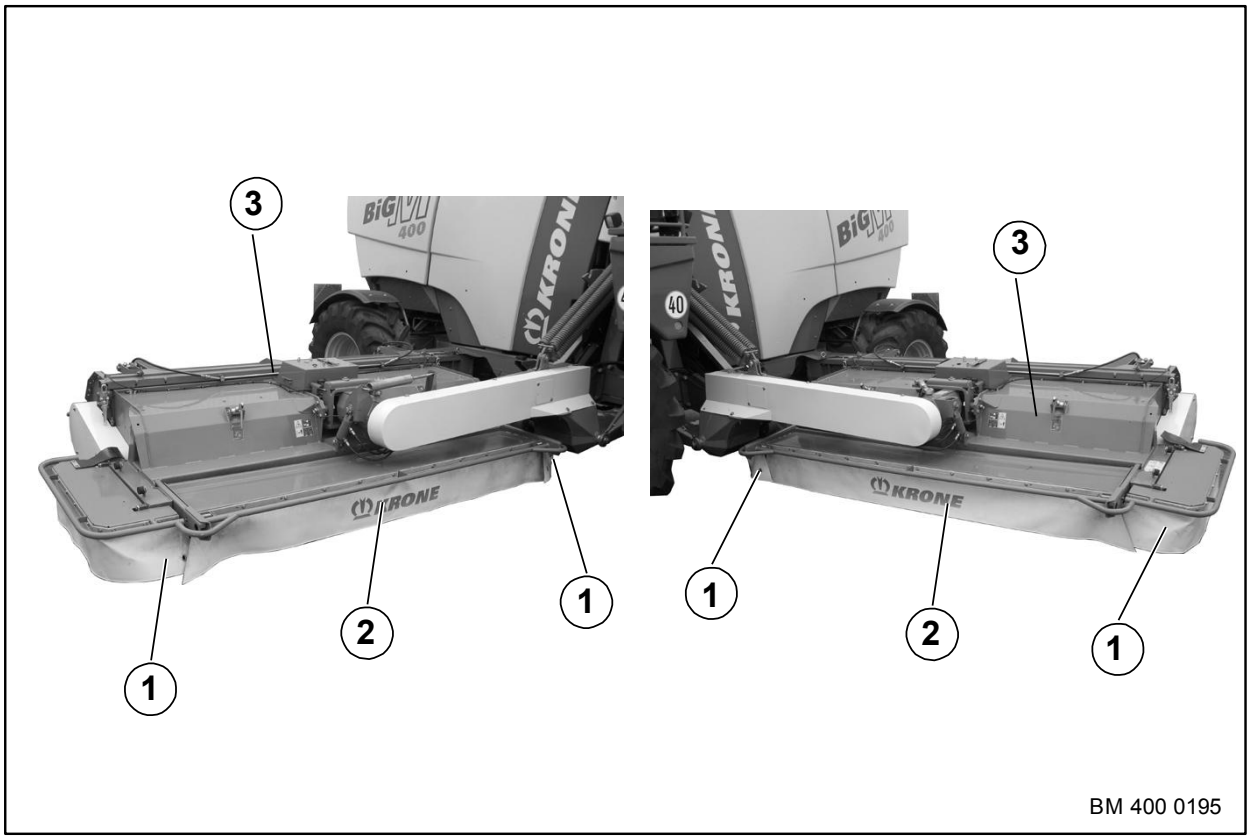


Fig. 181:

1 Side guard cloths
2 Front guard cloths
3 Mowing Unit

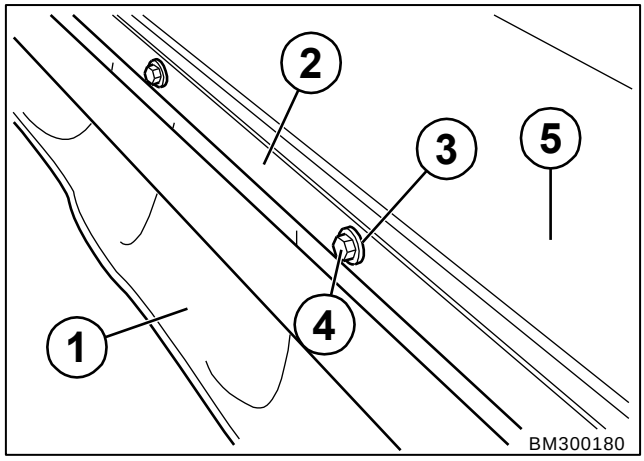


Fig. 182:

Fit the guard cloths (1) to the mowing unit (5) using the enclosed strip (2), washer (3) and bolt (4).

Note

The hem of the guard cloths should always face the inside.

7.2.2 Guard cloths (CRI with upper roller drive)

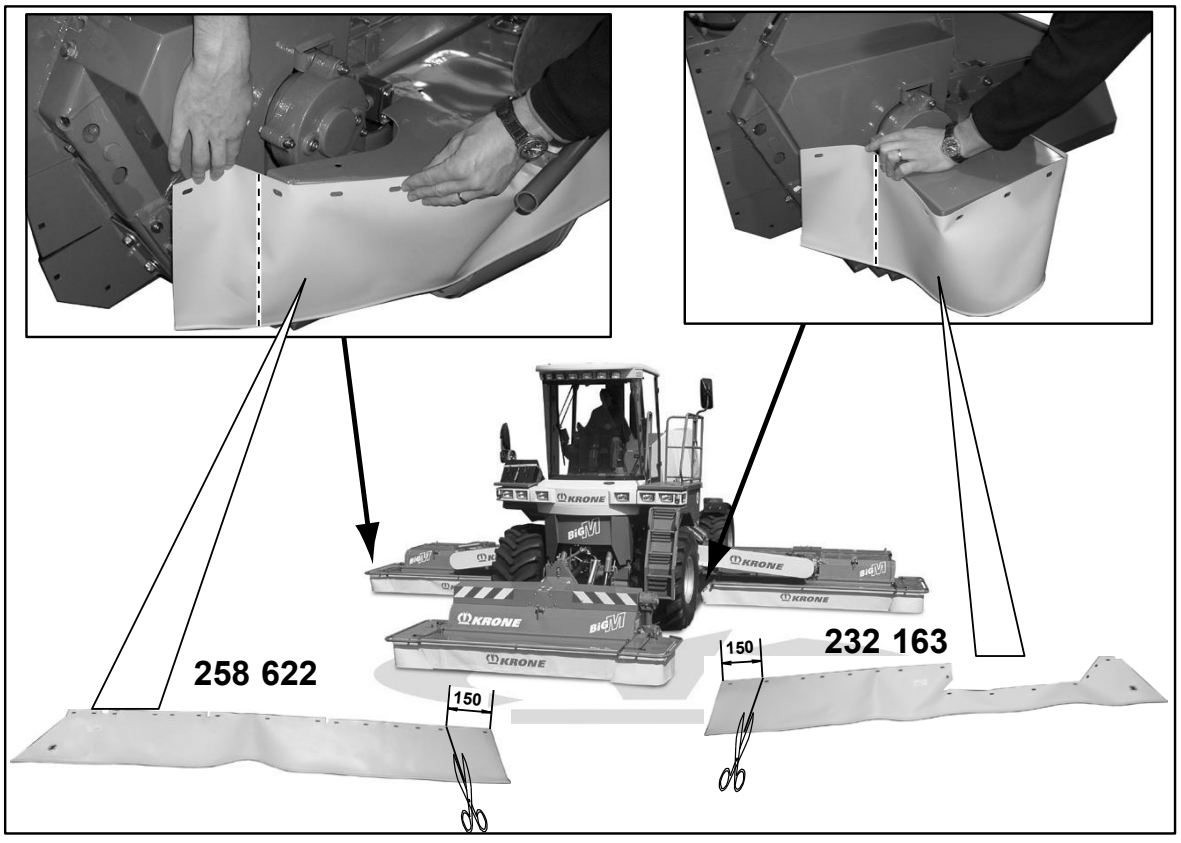


Fig. 183:

7.2.3 Adjusting the Warning Panel

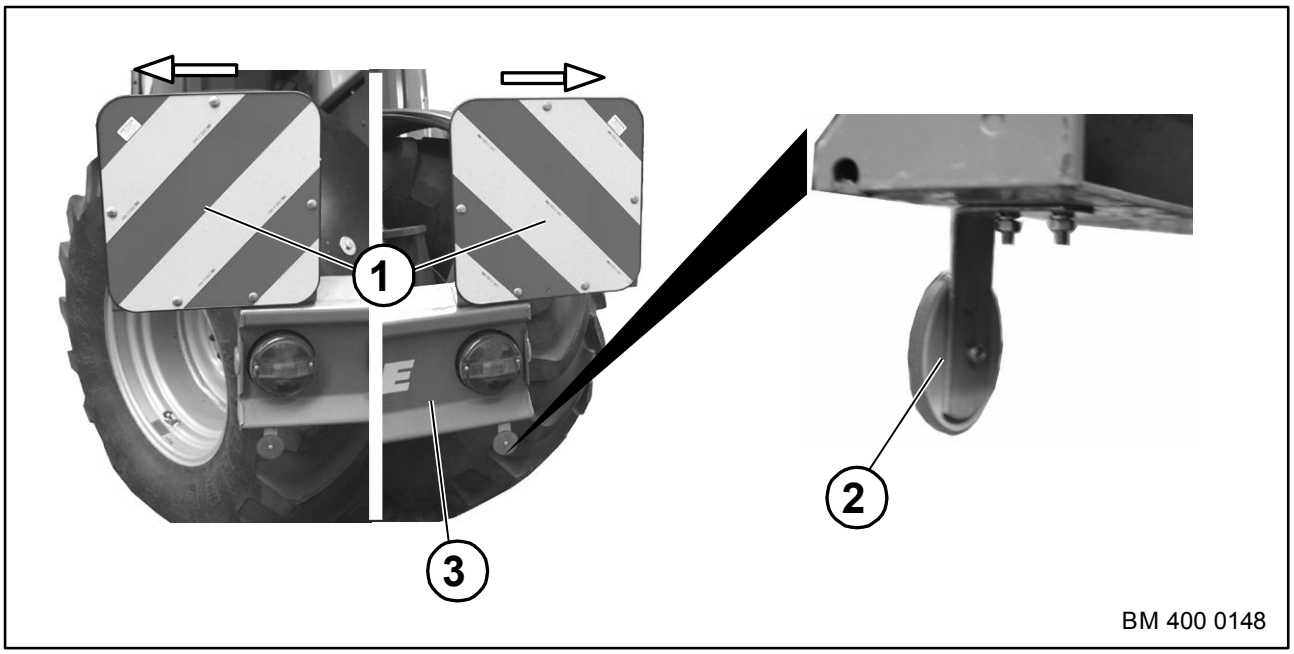


Fig. 184:

- Before transporting the vehicle on public roads, make sure that the rear warning signs (1) are fitted to the outside.
- Mount the rear reflectors (2) on the lamp support (3).

Note

The rear reflectors are on the left side of the machine in the storage compartment with the hardware required to mount them.

7.3 Installation of Cutter Blades

Danger!

Accidental start-up of machine and rolling.

Effect: Danger to life, injuries or damage to the machine.

- **Switch off the engine and remove the ignition key.**
- **Secure the machine against the possibility of rolling back.**

The lateral mowing units must be folded down to be able to install the cutter blades.

See chapter on initial start-up "Folding Down Lateral Mowing Units".

To install cutter blades:

See the chapter on maintenance of mowing units "Blade Changing on Cutting Discs with Blade Screw Connection" and "Blade Changing on Cutting Discs with Quick Blade Release"

8 Start-up

8.1 Check before Start-up

Danger!

Unexpected movement of the machine

Effect: Danger to life or serious injuries.

- **Setting tasks must only be performed when the drive is switched off and the engine is at a standstill!**
- **Switching off the engine**
- **Secure the machine against the possibility of rolling back**
- **Remove the ignition key.**
- **Switch off the main battery switch.**

8.2 Daily checks

To perform daily tests, the lateral mowing units and the front mowing unit must be in working position.

Note

Daily checks

Effect: Ensures the safety of the machine and extends the machine's service life

Regular performance of daily checks on the machine will ensure its safety and significantly extend the machine's service life.

8.2.1 On the Basic Machine

- Before starting up the machine, lubricate thoroughly.
- Check the safety equipment and replace if necessary.
- Check the fuel level
- Make certain screws are in place and tight.
- Coolant check
- Clean the engine compartment and intake sieve
- Check battery for cuts and breaks
- Check the tyre pressure
- Test of pilot lamps
- Test of light function
- Check the brakes for function
- Check the oil level on
- Hydraulic tank
- Engine
- Transfer gearbox

For further information about how tasks are designed, please refer to chapter "Maintenance of Basic Machine" and "Maintenance – Engine".

8.2.2 On the mowing units

- Always check the mowing units for damaged, missing or worn blades, retaining bolts, leaf springs and cutting discs/blade drum before starting operation; replace any parts that are damaged, missing or worn!
- Make certain screws are in place and tight.
- Check safety devices and guard cloths for wear and damage and replace if necessary.

Check oil level on:

- Main gearbox for lateral mowing units
- Angular gearbox/front mower
- Input gearbox/front mower (CV/CRI)
- Speed gearbox/front mower (CV)
- Angular gearbox/front mower (CRI)
- Gearbox for top roller drive (optional)
- Cutter bar/front mower (CV/CRI)
- Cutter bar / lateral mowing units

For further information about how tasks are designed, please refer to chapter "Maintenance – Mowing Units".

9 Driving and Transport

9.1 Transport / Road Travel

The mowing units must be folded up for transport.

Danger!

Road travel, passengers and handling

Effect: Danger to life, injuries or damage to the machine.

The following conditions must be met for road travel:

- **The mowing units must be in transport position.**
- **Move the side guards of the front mowing unit right and left to transport position.**
- **The "Road / Field" release switch must be in position I (road travel).**
- **The "Travelling gear" release switch must be in position II (travelling gear on).**
- **Close the shut-off valve on the front outrigger.**
- **When driving on public roads, the provisions of the Road Traffic Licensing Regulations must be adhered to (lighting, identification).**
- **To meet the requirements to maintain sufficient distance from overhead power lines the total height of the machine must not exceed 4 m (13 ft).**
- **When driving on public roads, lower the front axle to achieve a transport height of max. 4 m.**
- **Do not ride as a passenger on the ladders or platform.**
- **Never drive with an engaged parking brake.**
- **Always adapt the travelling speed of the machine on road and field to the given conditions.**
- **When driving down hills, on inclines or through obstacles, adjust driving behaviour to prevailing driving conditions.**
- **Note that the machine swings out when cornering.**

9.2 Preparation for transport/road travel

- Fold up the guards on the mowing units.
- Lower the hydraulic axle suspension. (See Info Centre chapter "Quick Access to Hydraulic Axle Suspension".)
- Fold up the mowing units. (See chapter "Operation – Mowing Units" (Transport Position).)
- Move the front mowing unit to centre position. (with sideshift option)
- Make certain the lock has engaged.
- Close the shut-off valve on the front outrigger.
- The "Road / Field" release switch must be in position (I) (road travel).
- The "Travelling gear" release switch must be in position (II) (travelling gear on).

9.2.1 Folding Up the Guards

Caution!

Effect: Damage to the machine

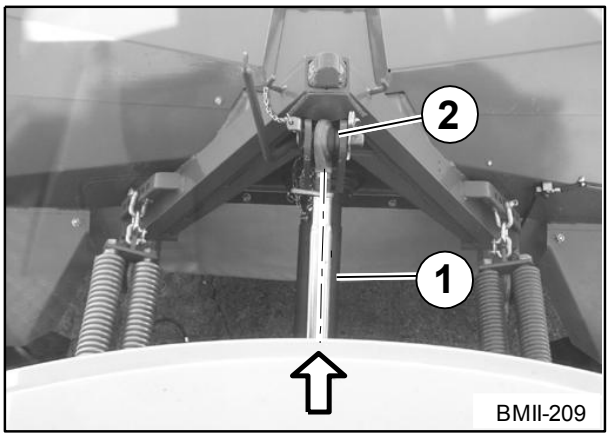
Check every time before transport to make certain the outer side guards (2) of the lateral mowing units right/left have automatically folded up into transport position.

If they have not, repeat the process for folding up the lateral mowing units. It may be necessary to move the outer side guards into transport position manually before the lateral mowing units are folded up.

Fig. 185:

Always move the side guard (1) of the front mowing unit from the right and left sides to the transport position before road travel.

9.2.2 Move the front mowing unit to central position (with sideshift option)



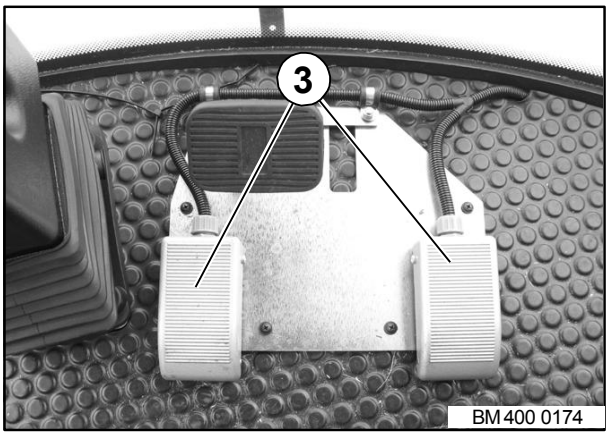


Fig. 186:

Move the front mowing unit to centre position with the foot pedals (3).

Note

The front mower is in central position, as soon as the arrow (1) is aligned to the centre of the top link (2).

9.2.3 Check interlock

Danger!

Check interlock

Effect: Danger to life, serious injuries or serious damage to the machine.

In transport position the lateral mowing units must be folded back and locked mechanically into vertical position. In addition the mowing units must be raised as far as the stop device. Once folded back check the position of the mowing units.

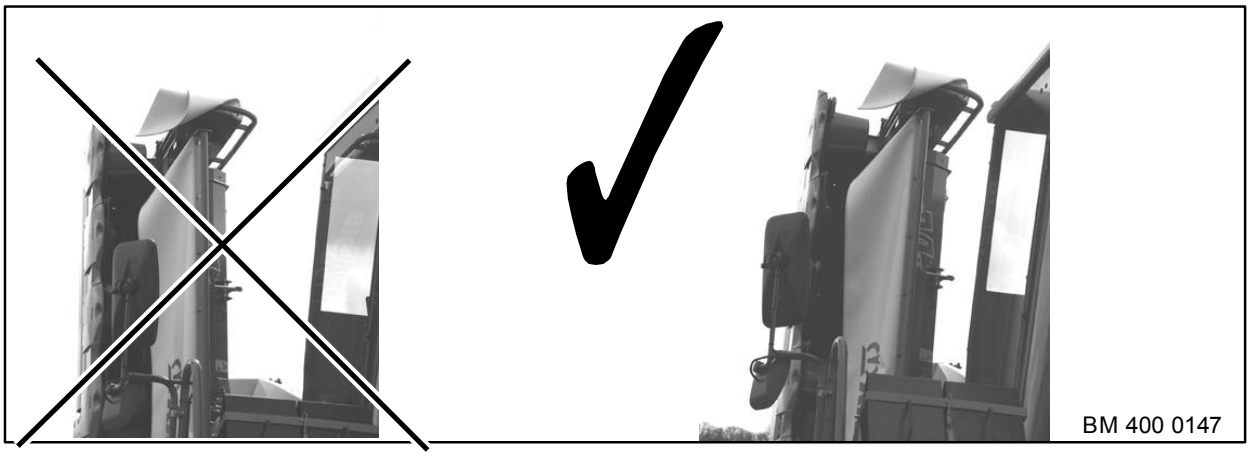


Fig. 187:

9.2.4 Disable the shut-off valve on the front outrigger.

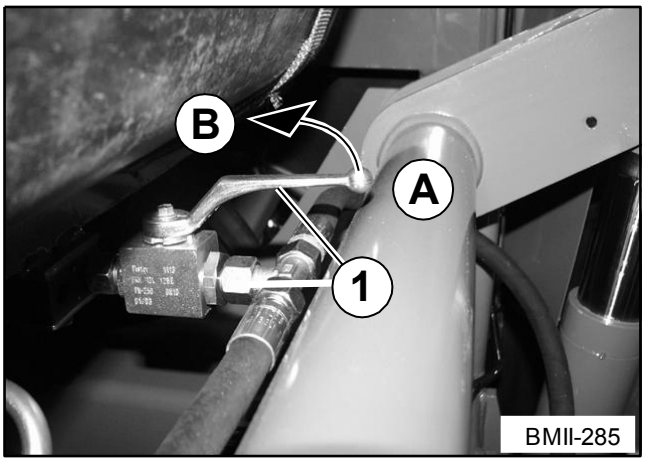


Fig. 188:

- Set the shut-off valve (1) on the front to the closed position (position B). The shut-off valve is located under the front guard.

9.2.5 Release switch – road/field

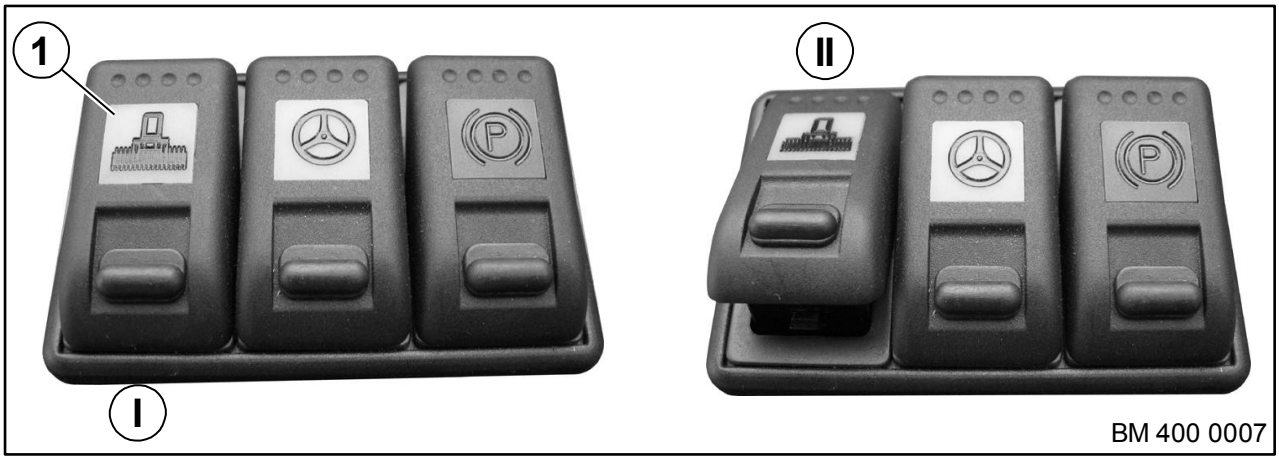


Fig. 189:

- Set the road safety switch to "Road travel" position. (Position II)

9.2.6 Release switch travelling gear

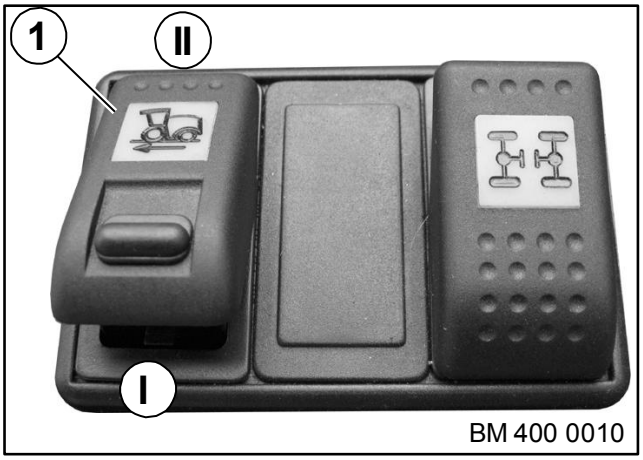


Fig. 190:

- Move the "Travelling gear" release switch to position (II) (travelling gear on).

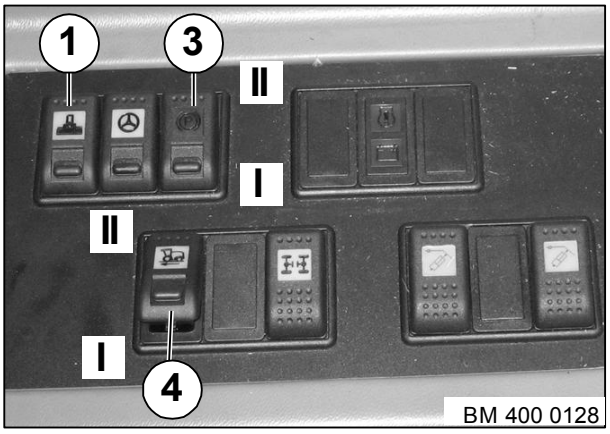
9.3 Starting the engine

Danger!

Do not allow the engine to run in enclosed areas.

Effect: Danger, toxic exhaust!

- **Only start the engine from the driver's seat.**
- **Always make certain there is no one in the danger zone of the machine.**
- **Activate the horn.**
- **Never allow the engine to run in closed rooms without an extraction unit.**
- **Ensure sufficient ventilation.**



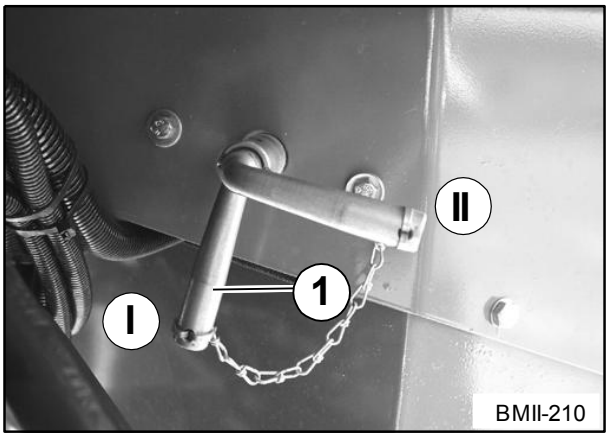


Fig. 191:

Prerequisites:

- The main battery switch must be in position I (closed).
- Release switch (3) "Parking brake" must be in position II (engaged).
- Release switch (1) "Road/Field" must be in position II (Field mode).
- Release switch (4) "Travelling gear" must be in position I (off).

Starting the engine.

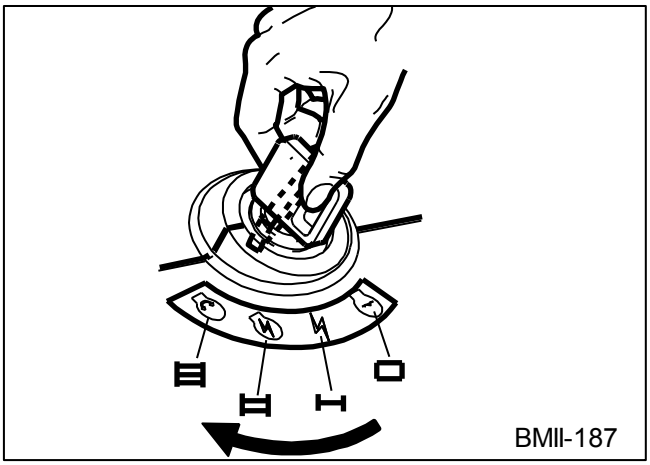


Fig. 192:

The following conditions must be met to start the machine:

- The main battery switch must be in position I (closed).
- "Parking brake" release switch must be in position II (engaged).
- "Travelling gear" release switch must be in position I (off).

Note

Never activate the starter for longer than 20 seconds. Release the ignition key as soon as the engine is running.

If the starting process needs to be repeated:

- Switch off the ignition and wait for at least 2 minutes.
- Repeat the starting process.

After the engine is started the "Engine fault" control light shines briefly. Check immediately whether this pilot lamp goes out. If not, switch off the engine at once and remove the fault.

The job computer carries out internal system check.

After the ignition is switched on, depending on the position of the "Road / field" release switch, the basic screen "Road travel" or "Field mode" appears in the display.

At lower temperatures:

- In the cold season let the engine run at idling speed for a few minutes after starting.
- Always use a so-called “winter diesel” fuel for operation in cold seasons at temperatures below 10 °C (50 °F).

9.3.1 Killing the engine

Caution!

Killing the engine

Effect: Damage to the machine

- **If an engine at operating heat stalls, immediately restart the engine to avoid an excessive heat accumulation at functionally important parts. Allow the engine to run at idle speed for approx. 1 to 2 minutes before finally turning it off.**

9.3.2 Starting with an Auxiliary Battery

Danger!

Battery gases are highly explosive
Effect: Danger to life, injuries or damage to the machine.
• Keep ignition sources and naked flames away from the battery.
• Note the correct polarity when disconnecting and connecting the battery.

The machine can be started with an additional 12-V battery in the cold season. The auxiliary battery must be connected in parallel with the machine batteries.

9.4 Starting to Drive

Danger!

Starting to Drive

Effect: Danger to life, injuries or damage to the machine.

- **Do not ride as a passenger on the ladders or platform.**
- **Never drive with an engaged parking brake.**
- **Always adapt the travelling speed of the machine on road and field to the given conditions.**
- **When driving down hills, on inclines or through obstacles, adjust driving behaviour to prevailing driving conditions.**
- **Note that the machine swings out when cornering.**

9.4.1 Setting the acceleration behaviour

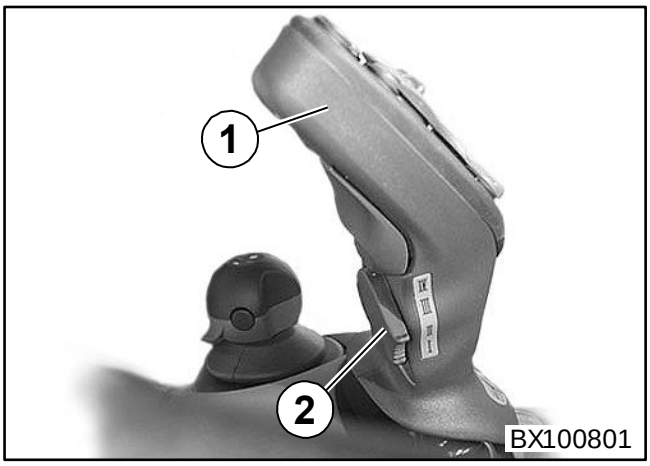


Fig. 193:

Four different acceleration stages can be selected while driving with the selector switch acceleration ramp (2) attached to the multi-function lever (1).

With constant operation of the multi-function lever (1) in a direction and at a constant engine speed, the driving speed will increase slowest in acceleration stage I and fastest in acceleration stage IV.

- Switch the selector switch (2) into the desired acceleration stage.

9.4.2 General on Driving

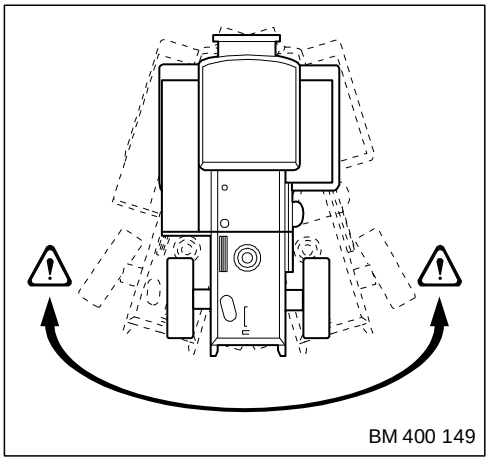


Fig. 194:

Observe the following instructions when driving:

- Handling the machine requires a certain amount of practice because of the rear steering.
- The machine handles differently in level I and II.
- In the case of an error message in the Info centre immediately stop and remove the error. If you cannot rectify the fault inform the customer service or your KRONE dealer.

9.4.3 Preventing an overheating of the hydrostatic system

If the hydrostatic system is overheated, an acoustic warning signal occurs and an optical warning symbol appears on the display. Switch off the engine and establish cause of overheating.

Then improve the effectiveness of the hydrostatic travelling gear by selecting a lower speed, which will reduce the oil temperature.

Note

When the travelling gear has been killed, never wait longer than 5 seconds to reset the driving lever to “neutral”; subsequently select a lower speed.

The drive moment which acts on the drive wheels depends on the oil pressure in the hydrostatic drive system. If the pressure requirement becomes higher than the pressure in the hydrostatic system, the pressure relief valve will open and the self-propelled high performance mower-conditioner will reduce speed or not move.

As soon as the required drive moment decreases (this is achieved by selecting a lower speed), the self-propelled high performance mower-conditioner will drive on again.

9.4.4 Driving forwards

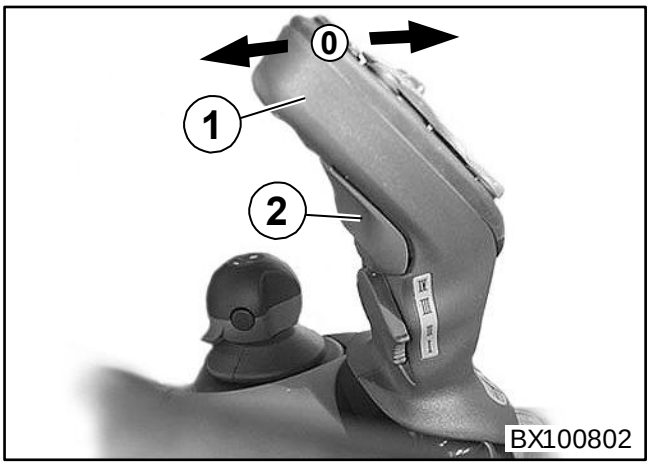


Fig. 195:

Starting forwards from standstill

After the engine is started and the travelling gear is released, the gearbox is in the neutral position.

- Press the activation button for the travelling gear (2) and keep it pressed.
- Move the multi-function lever (1) to the front, the machine starts to move forwards and accelerates.
- If you release the multi-function lever (1), it returns automatically to the mid position (0), the speed remains constant.
- If you move the multi-function lever (1) to the rear while travelling, the machine decelerates, it is braked until is comes to a stop by friction.

9.4.5 Reversing

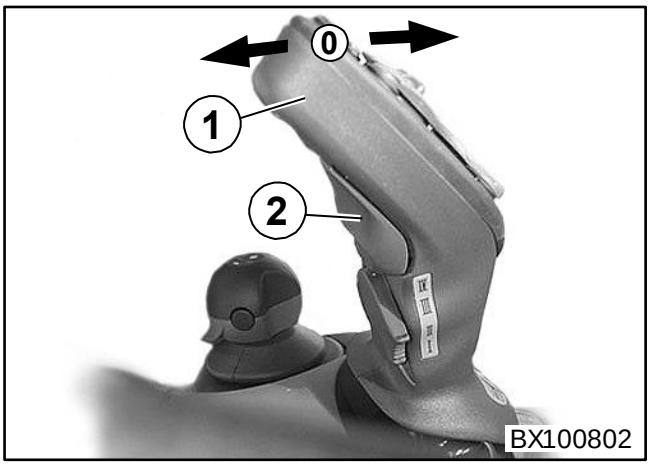


Fig. 196:

Starting in reverse from standstill

After the engine is started and the travelling gear is released, the gearbox is in the neutral position.

- Press the activation button for the travelling gear (2) and keep it pressed.
- Move the multi-function lever (1) to the rear, the machine starts to move in reverse and accelerates.
- If you release the multi-function lever (1), it returns automatically to the mid position (0), the speed remains constant.
- If you move the multi-function lever (1) forward during travel, the machine decelerates. It is braked until it comes to a stop by friction.

Note
An acoustic warning signal sounds when reversing.

9.5 Cruise control

The cruise control can be activated only when travelling forwards. When cruise control is activated, the machine is accelerated or braked at the set acceleration level for the speed that has been saved for

cruise control.

9.5.1 Storing the speed for the cruise control mode

The speed is saved for the operating mode (road/field) the machine is currently in. One speed can be saved for road and field mode each.

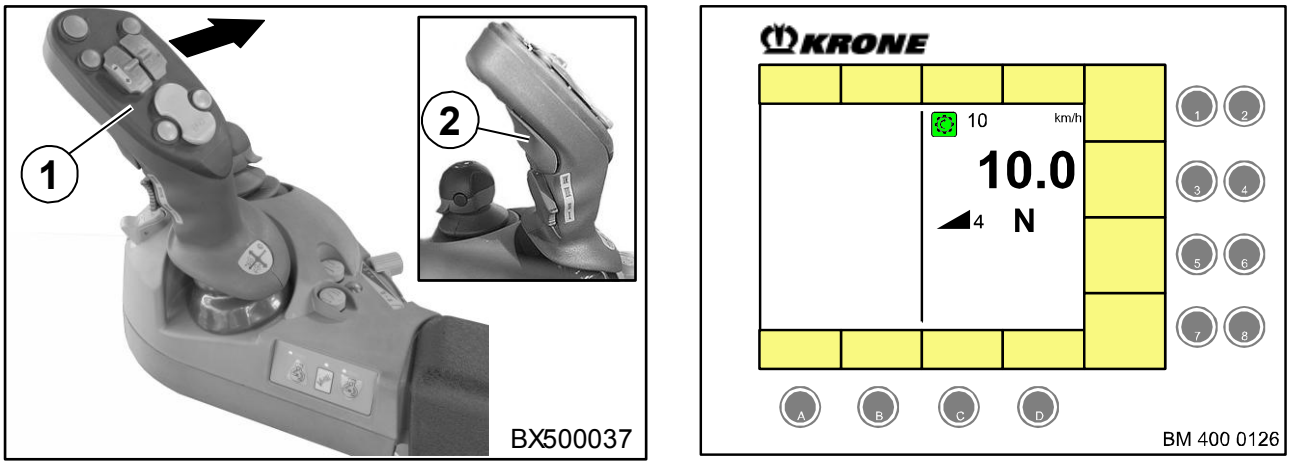


Fig. 197:

- Accelerate the forage harvester to the desired speed.
- While travelling press the activation button for the travelling gear (2) and keep it pressed, move the multi-function lever (1) to the right and back to the middle position.

The momentary travelling speed is stored.

The stored speed (1) is displayed in the display of the Info centre in the travelling gear data Info area.

9.5.2 Activating cruise control

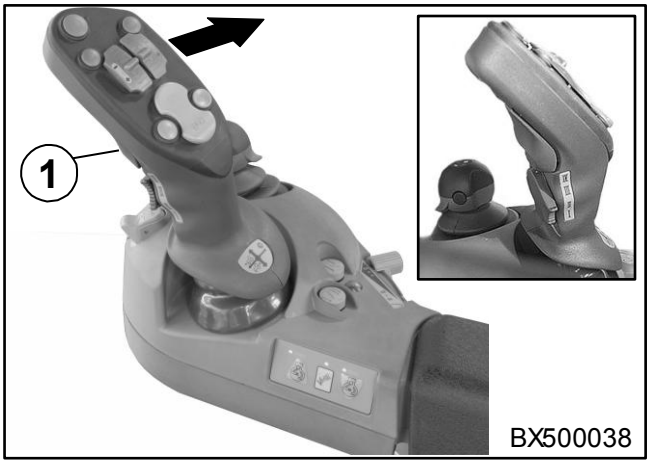


Fig. 198:

- Move the multi-function lever (1) to the right without the activation key while travelling.

  The saved speed is reached and the icon for cruise control becomes active in the Info Centre display.

9.5.3 Deactivating cruise control

The cruise control is deactivated by overriding the multi-function lever, operating the operating brake and switching off the travelling gear.

If you switch into "Road/field" mode, the display switches to the value that is saved for the currently selected operating mode (field or road speed).

9.6 Stopping

The machine can be brought to a stop either with the multi-function lever or with the foot brake.

9.6.1 Stopping with the multi-function lever

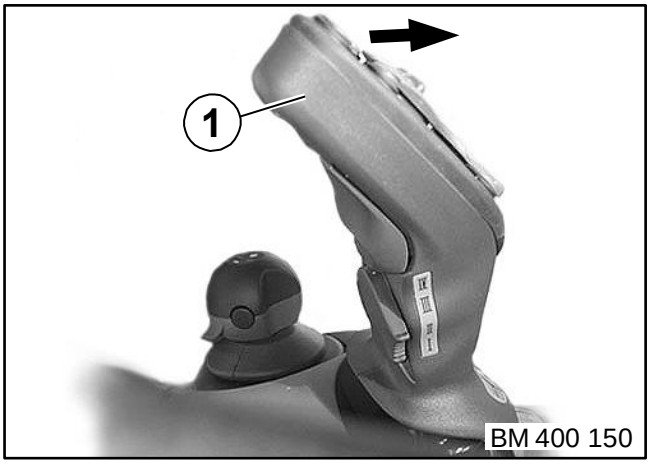


Fig. 199:

Stopping from forward travel:

If you move the multi-function lever (1) to the rear during forward travel, the machine decelerates. It is braked until is comes to a stop.

Note

Alternatively

If you move the multi-function lever (1) to the left during forward travel, the machine decelerates. It is braked until is comes to a stop.

Stopping from reverse travel:

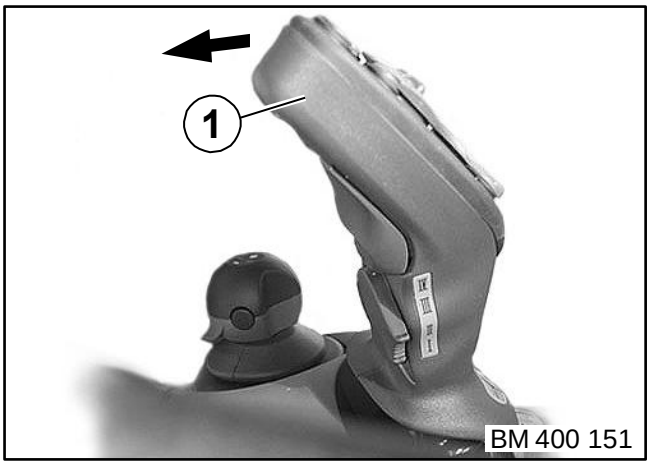


Fig. 200:

If you move the multi-function lever (1) forward during reverse travel, the machine decelerates. It is braked until is comes to a stop.

9.6.2 Stopping with Foot Brakes

Danger!

Effect: Danger to life, injuries or damage to the machine.

- **The brake function must be checked before the start of every trip.**
- **The footbrake must take effect beginning with the first third of pedal travel.**
- **Check the brake linings regularly**

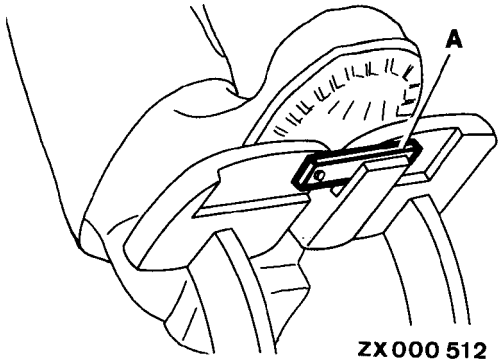


Fig. 201:

Brake the machine slightly:

- Depress the foot brake slightly
- When you release the brake pedal, the machine accelerates and returns to its original driving speed.

Brake the machine strongly (braking to avoid accident):

- Press the foot brake forcefully downwards.The machine immedialety comes to a complete stop.

9.7 Parking brake

Danger!

Leaving the Cab

Effect: Danger to life, injuries or damage to the machine.

- **Before leaving the cab, always apply the parking brake.**
- **Release the parking brake each time before starting to drive.**

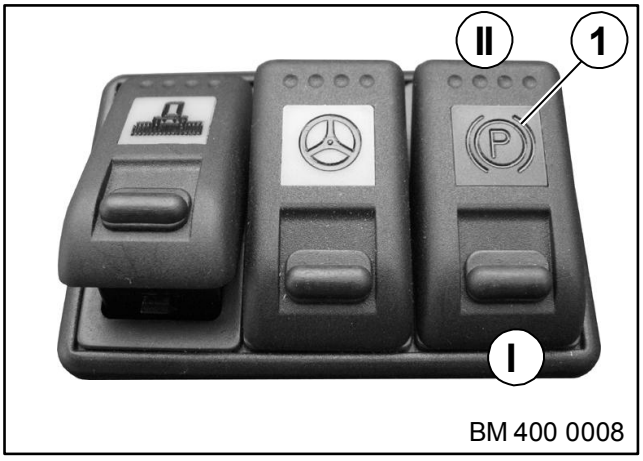


Fig. 202:

Note

Parking brake engaged

Effect: Brake overheating

- **Do not drive with the parking brake engaged.**

I - Parking brake released

II - Parking brake engaged

9.8 Switch off the engine

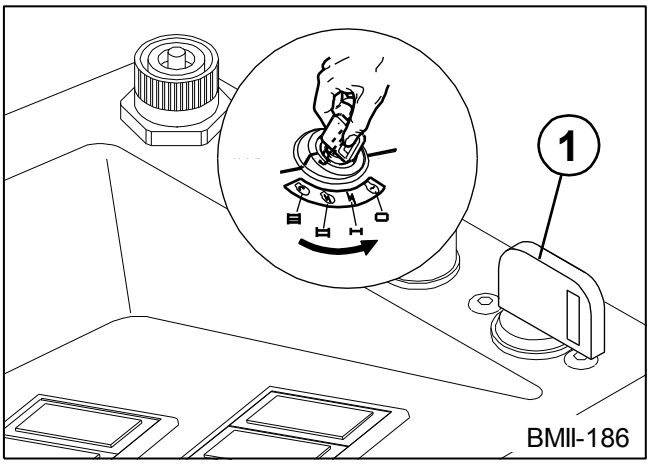


Fig. 203:

Note

Effect: Longer service life

Before finally switching off allow the engine 1 - 2 min. to run in the lower idling range so all important parts of the engine can cool down.

- Turn the ignition key (1) to position “0”.

9.9 Switch off the machine

Danger!

Leaving the machine

Effect: Danger to life, serious injuries or serious damage to the machine.

- **Move the mowing units into transport position.**
- **Move the "Road/Field" release switch to the road position.**
- **Apply the holding brake.**
- **Move the "Travelling gear" release switch to position I (off).**
- **Switch off the engine.**
- **Remove the ignition key.**
- **If necessary, fit wheel chocks in place.**

9.10 Towing

Caution!
Only move machine out of the danger zone.
Never tow over longer distances.

If the machine no longer builds up the oil pressure for releasing the parking brake, then the parking brake must be released manually.

9.10.1 Releasing the holding brake manually

Danger!

Accidental start-up of machine and rolling.

Effect: Danger to life, injuries or damage to the machine.

- **Switch off the engine and remove the ignition key.**
- **Secure the machine against the possibility of rolling back.**

Fitting wheel chocks

- Place wheel chocks (1) on both sides in front of or behind (according to slope) the driving wheels (front axle).
- Always place the wheel chocks (1) so that the machine cannot roll away.
- Fold the wheel chocks (1) open completely and place then close up against the drive wheels.

The spring (1) must be set on a block to release the parking brake.
To do this:

- Loosen the nuts (2)
- Set the spring (1) to block.
- Tighten the nuts (2) and counter.

Note

Towing

- **Switch on the ignition, so that the indicator (hazard warning flasher) and brake lights function.**
- **Switch the road/field release switch into the road travel position.**
- **Increased steering and braking forces must be applied with the engine switched off.**

10 Operation – Mowing Units

10.1 Intended Use

The disc mowers are designed solely for normal agricultural use (intended use).

Any use of the machine for other purposes is deemed not to be in accordance with intended use. The manufacturer shall not be liable for any resulting damage; the user alone shall bear the risk.

Operation in accordance with intended use also includes observing the operating, maintenance and service instructions specified by the manufacturer.

Unauthorised modifications to the machine may affect the properties of the machine or disrupt proper operation. For this reason, unauthorised modifications shall exclude any liability of the manufacturer for consequential damage.

The disc mower must be used, maintained and repaired only by personnel who are acquainted with the machine and have been informed of the dangers involved.

The applicable accident prevention regulations and all other generally recognised safety, health and road traffic regulations must be observed.

10.2 Operation of Mowing Units

Danger!

No one is permitted in the danger zone when lifting, lowering or folding up mowing units, or when turning on drives.

Effect: Danger to life, serious injuries or serious damage to the machine.

- **Do not lift, lower or fold up the mowing unit until you are absolutely sure that neither persons, animals nor objects are in the swivel range of the mowing unit.**

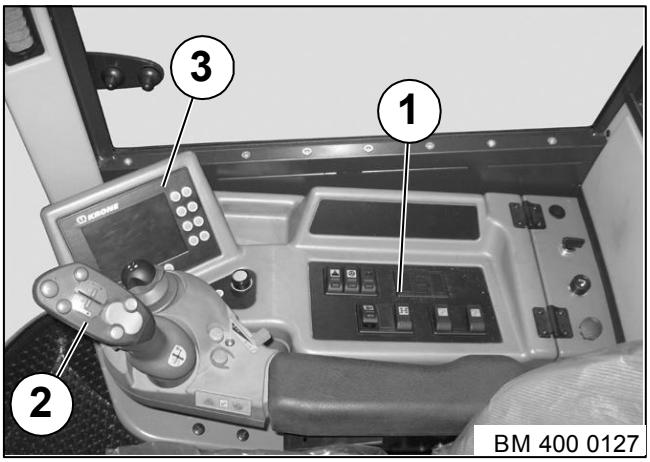


Fig. 204:

Operation of mowing units is divided into three areas.

1 Operating panel

The operating panel contains switches that are needed to operate the mowing units. (for example "Road/Field" release switch)

2 Multi-function lever

The multi-function lever combines all functions needed to operate the mowing units. (this includes lifting, lowering, folding up, switching to working position, transport position or headland position and turning on the mowing unit drives)

3 Info Centre

All settings/specifications for automatic sequences are stored in the Info Centre. (for example time/path control, overcut, automatic cleaning time)

For further information, please refer to the Chapter "Info Centre".

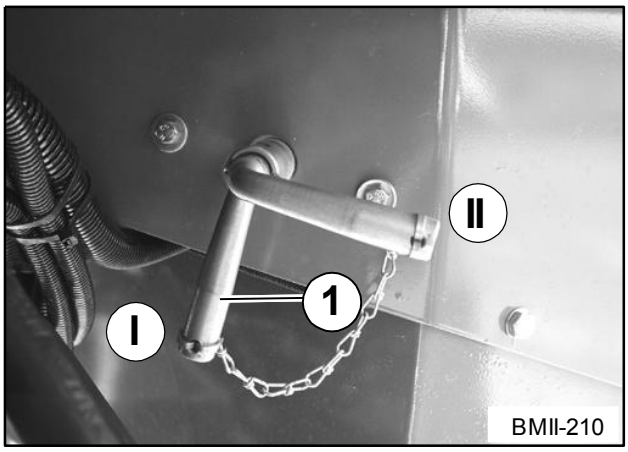
10.3 Folding Down Lateral Mowing Units

Danger!

No one is permitted in the danger zone when lifting, lowering or folding up mowing units, or when turning on drives.

Effect: Danger to life, serious injuries or serious damage to the machine.

- **Do not lift, lower or fold up the mowing unit until you are absolutely sure that neither persons, animals nor objects are in the swivel range of the mowing unit.**



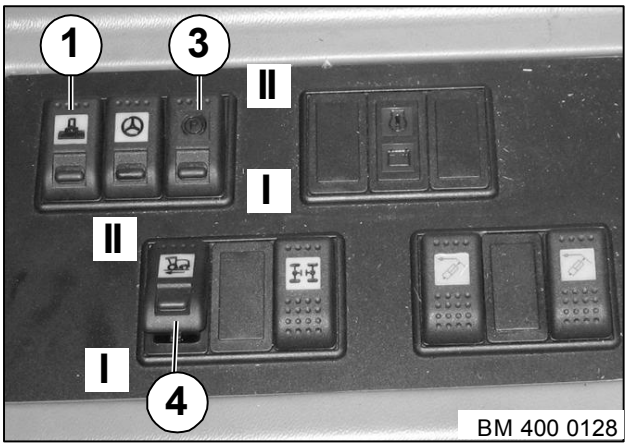


Fig. 205:

Prerequisites:

- The main battery switch (1) must be in position I (closed).
- Release switch (3) "Parking brake" must be in position II (engaged).
- Release switch (4) "Travelling gear" must be in position I (off).
- Starting the engine.
- Release switch (1) "Road/Field" must be in position II (Field mode).

10.3.1 Lowering the Lateral Mowing Units from Transport Position to Headland Position

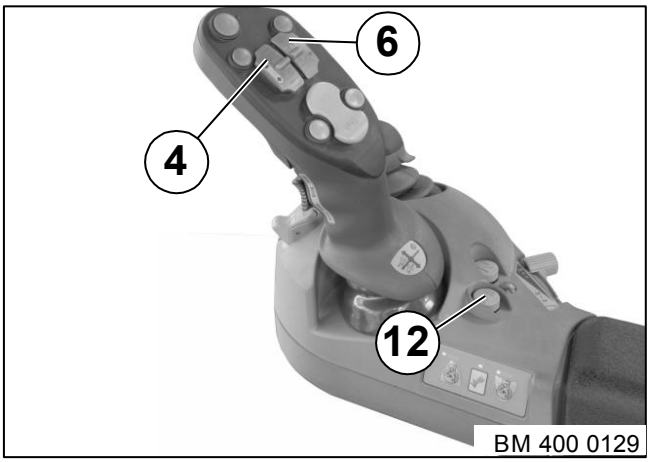


Fig. 206:

- Using the (4) keys with (12) key pressed on the multi-function lever, lower the left mowing unit from transport position to headland position.
- Using the (6) keys with (12) key pressed on the multi-function lever, lower the right mowing unit from transport position to headland position.

Note

Hold the relevant keys down until small movements are no longer visible on the mowing units.

10.3.2 Lowering the Lateral Mowing Units from Headland Position to Working Position

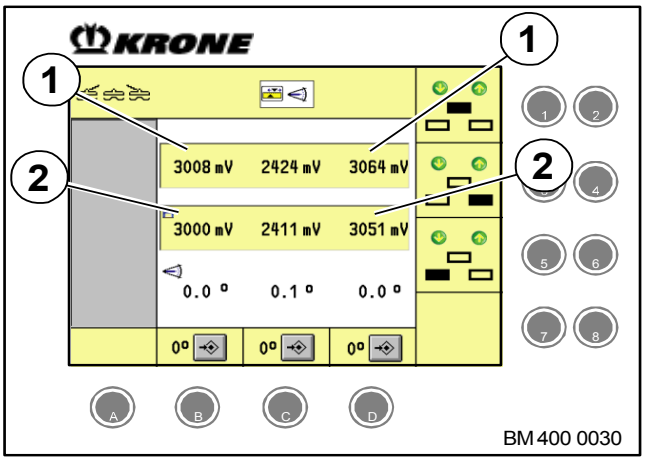


Fig. 207:

- Using the (4) keys on the multi-function lever, lower the left mowing unit from headland position to working position.
- Using the (6) keys on the multi-function lever, lower the right mowing unit from headland position to working position.

Note

Hold the relevant keys down until small movements are no longer visible on the mowing units.

10.3.3 Lower the front mowing unit into working position

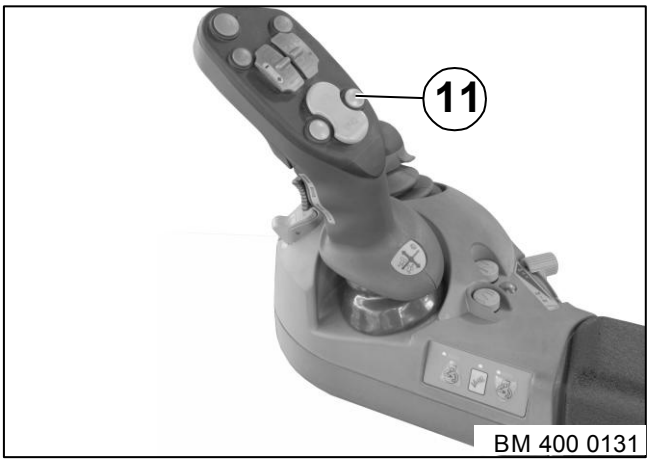


Fig. 208:

- Press the (11) key briefly.

The mowing unit automatically lowers into working position.

10.4 Headland Position

Danger!

No one is permitted in the danger zone when lifting, lowering or folding up mowing units, or when turning on drives.

Effect: Danger to life, serious injuries or serious damage to the machine.

- **Do not lift, lower or fold up the mowing unit until you are absolutely sure that neither persons, animals nor objects are in the swivel range of the mowing unit.**

Move all mowing units automatically to headland position

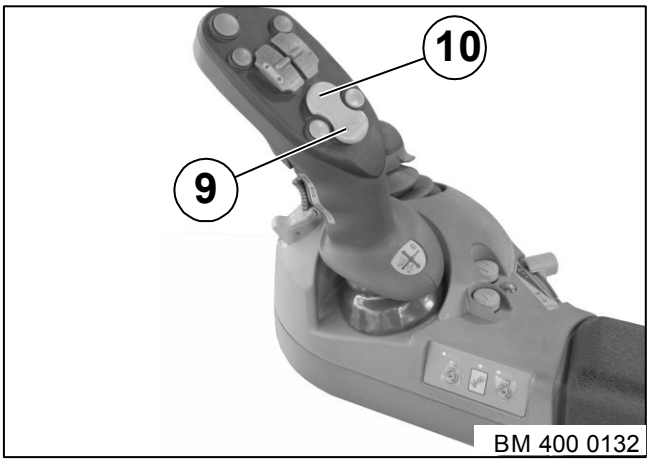


Fig. 209:

Headland position can be activated by briefly pressing the "9" key (lift all mowers) or the "10" key (lower all mowers).

The lateral mowing units are then lifted to the headland position or are lowered to the working position depending on the set mode (time / distance control).

The mowing units are lifted or lowered in the following order.

- Front mowing unit: always immediately (without delay)
- lateral right/left mowing units: delayed according to the setting in the Info Centre

Settings can only be made in the Info Centre. See Info Centre chapter "Machine Setting"

Move the mowing units to the headland position

Note

The "Lift all mowers" function is designed for full engine speed. If the engine speed is slower, the front mowing unit will not lift completely.

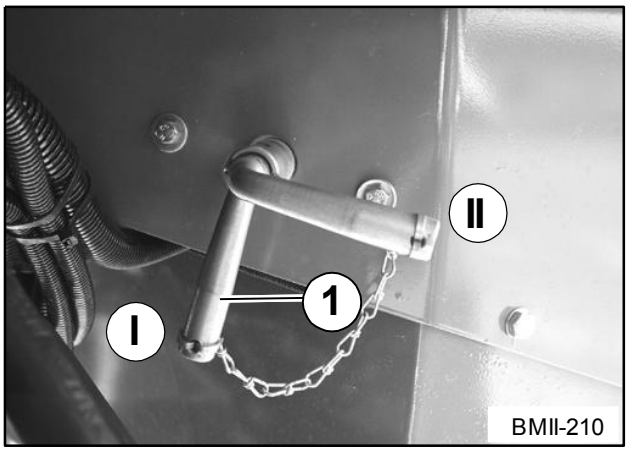
10.5 Mowing Unit Drive

Danger!

No one is permitted in the danger zone when lifting, lowering or folding up mowing units, or when turning on drives.

Effect: Danger to life, serious injuries or serious damage to the machine.

- **Do not lift, lower or fold up the mowing unit until you are absolutely sure that neither persons, animals nor objects are in the swivel range of the mowing unit.**



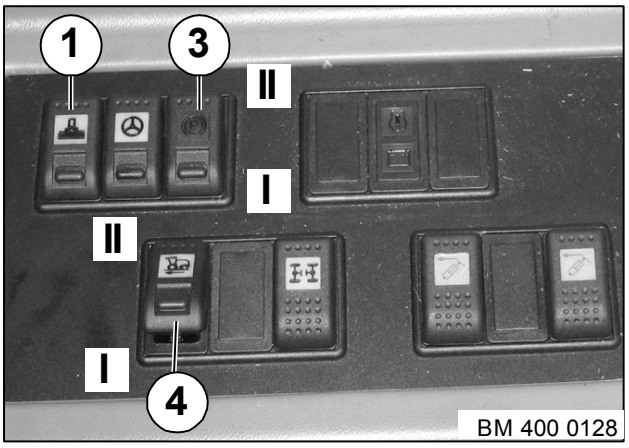


Fig. 210:

Prerequisites:

- The main battery switch (1) must be in position I (closed).
- Release switch (3) "Parking brake" must be in position II (engaged).
- Release switch (4) "Travelling gear" must be in position I (off).
- Starting the engine.
- Release switch (1) "Road/Field" must be in position II (Field mode).
- Move the mowing units at least to the headland position.
- Move the "Travelling gear" release switch (4) to position (II) "Travelling gear on".

Note

Mowing

To be able to switch on the mowing unit drives, the mowing units must be in at least the headland position or lower.

10.5.1 Switching the Mowing Unit Drives On and Off

Note

The cross switch lever turns the mowing unit drives on and off.

It is important when activating the cross switch lever for it always to be activated beyond the second resistor. If the (17) key is pressed in addition to the cross switch lever, make certain the key remains activated during the entire search process. Do not release the key (17) until the cross switch has moved back to the central position.

10.5.2 Switching the Left Mowing Unit Drive On/Off

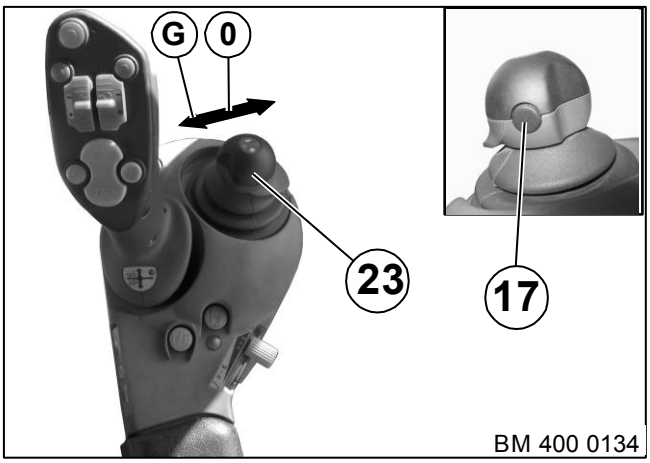


Fig. 211:

To switch on:

- Press the key (17) on the cross switch lever (23).
- With the key (17) pressed, move the cross switch lever to the left (G) beyond the second resistor.
- With the key (17) pressed, move the cross switch lever back to the central position (0).
- Left mowing unit drive is turned on.

To switch off:

- Without the (17) key pressed, move the cross switch lever (23) to the left (G) beyond the second resistor. The left mowing unit drive is turned off.
- If the cross switch lever is released, it automatically returns to the central position (0). The drive remains turned off.

10.5.3 Switching the Right Mowing Unit Drive On/Off

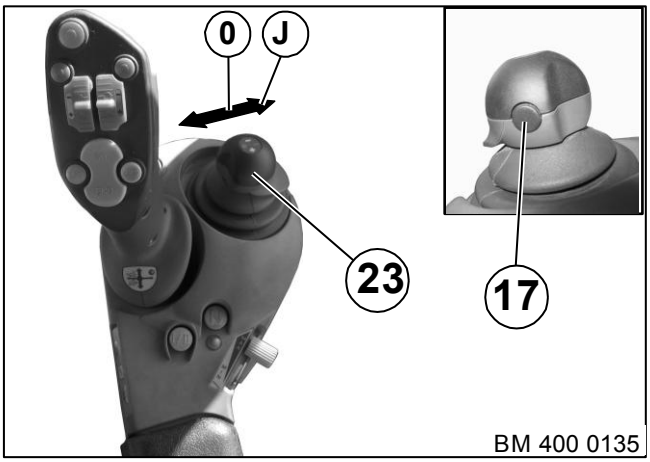


Fig. 212:

To switch on:

- Press the key (17) on the cross switch lever (23).
- With the key (17) pressed, move the cross switch lever to the right (G) beyond the second resistor.
- With the key (17) pressed, move the cross switch lever back to the central position (0).
- Right mowing unit drive is turned on.

To switch off:

- Without the (17) key pressed, move the cross switch lever (23) to the right (G) beyond the second resistor. The left mowing unit drive is turned off.
- If the cross switch lever is released, it automatically returns to the central position (0). The drive remains turned off.

10.5.4 Switching the Front Mowing Unit Drive On/Off

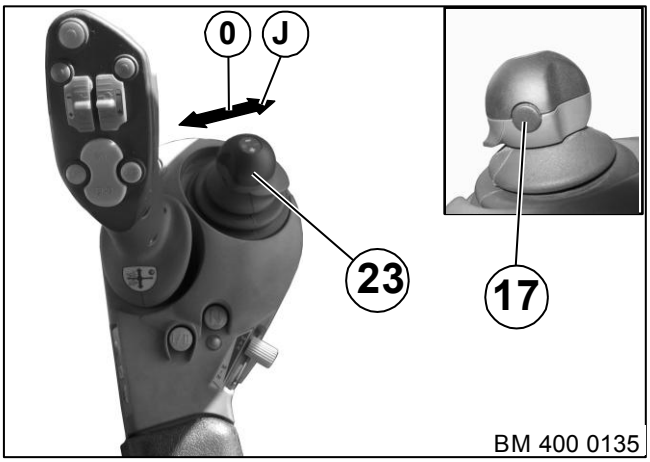


Fig. 213:

To switch on:

- Press the key (17) on the cross switch lever (23).
- With the key (17) pressed, move the cross switch lever forward (G) beyond the second resistor.
- With the key (17) pressed, move the cross switch lever back to the central position (0).
- Front mowing unit drive is turned on.

To switch off:

- Without the (17) key pressed, move the cross switch lever (23) forward (G) beyond the second resistor. The front mowing unit drive is turned off.
- If the cross switch lever is released, it automatically returns to the central position (0). The drive remains turned off.

10.5.5 Switching All Mowing Unit Drives On/Off

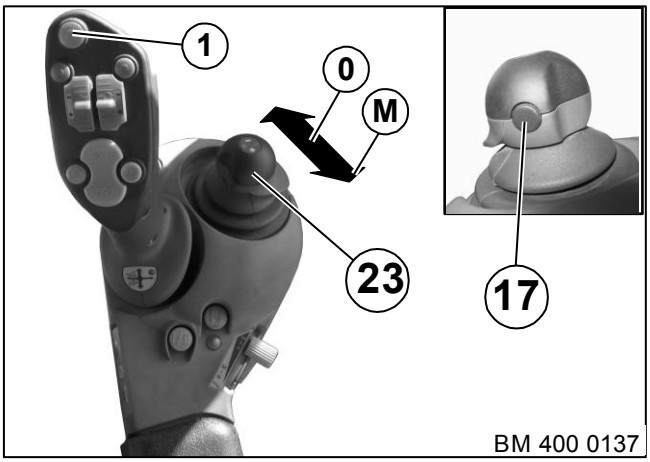


Fig. 214:

To switch on:

- Press the key (17) on the cross switch lever (23).
- With the key (17) pressed, move the cross switch lever back (M) beyond the second resistor.
- With the key (17) pressed, move the cross switch lever back to the central position (0).
- All mowing unit drives are turned on

To switch off:

- Without the (17) key pressed, move the cross switch lever (23) back (M) beyond the second resistor. All mowing unit drives are turned off.
- If the cross switch lever is released, it automatically returns to the central position (0). The drives remain turned off.

Note

Switch off all mowing unit drives

- **Pressing the (1) key on the multi-function lever also turns off all mowing unit drives.**

10.6 Folding Up Lateral Mowing Units

Danger!

No one is permitted in the danger zone when lifting, lowering or folding up mowing units, or when turning on drives.

Effect: Danger to life, serious injuries or serious damage to the machine.

- **Lateral mowing units may only be folded up when the mowing units have come to a complete stop.**
- **Do not lift, lower or fold up the mowing unit until you are absolutely sure that neither persons, animals nor objects are in the swivel range of the mowing unit.**
- **After the mowing units are folded up, move the safety switch "Road/Field" to position I (Road travel).**

Note

Explanation of headland position / transport position

A distinction is made when lifting the mowing units between headland position and transport position.

In the headland position, the mowing units are automatically raised to the headland position.

10.6.1 Checking the Lock on the Lateral Mowing Units

Danger!

Check interlock

Effect: Danger of fatal or serious injuries or serious damage to the machine.

- **Before the lateral mowing units are brought in transport position, make a visual inspection of the mechanical fuses. If the mowing units are in working position the pawl (1) must be in the position as illustrated (a = approx. 5°). Ensure that the spring (2) is in a correct position.**

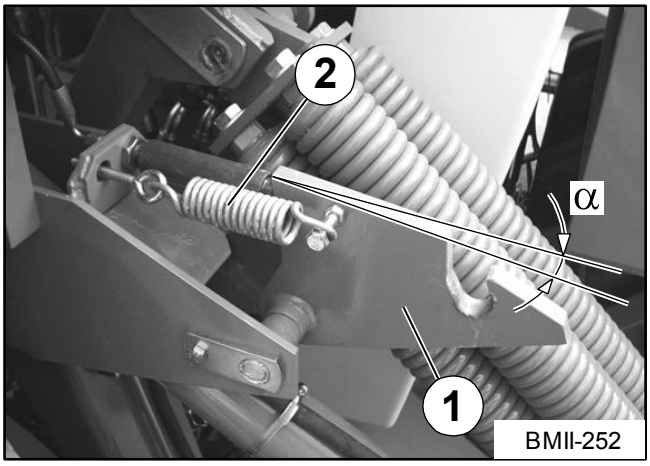


Fig. 215:

10.6.2 Lifting the Lateral Mowing Units from working Position to Headland Position

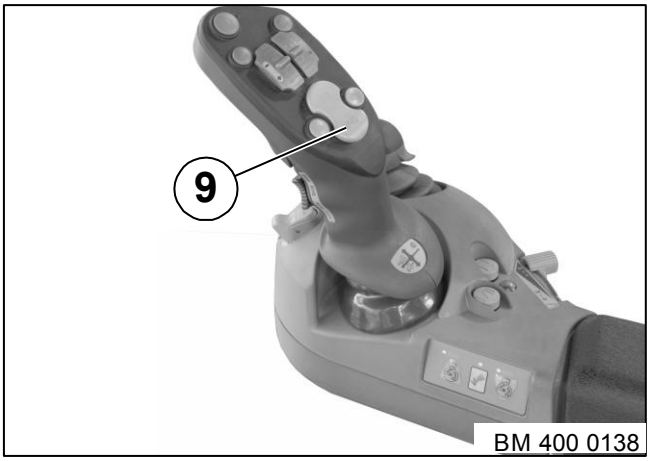


Fig. 216:

- The (9) key on the multi-function lever automatically lifts all mowing units to the headland position.

10.6.3 Folding the Lateral Mowing Units from Headland Position to Transport Position

Danger!

No one is permitted in the danger zone when lifting, lowering or folding up mowing units, or when turning on drives.

Effect: Danger to life, serious injuries or serious damage to the machine.

- **Lateral mowing units may only be folded up when the mowing units have come to a complete stop.**
- **Do not lift, lower or fold up the mowing unit until you are absolutely sure that neither persons, animals nor objects are in the swivel range of the mowing unit.**
- **After the mowing units are folded up, move the safety switch "Road/Field" to position I (Road travel).**

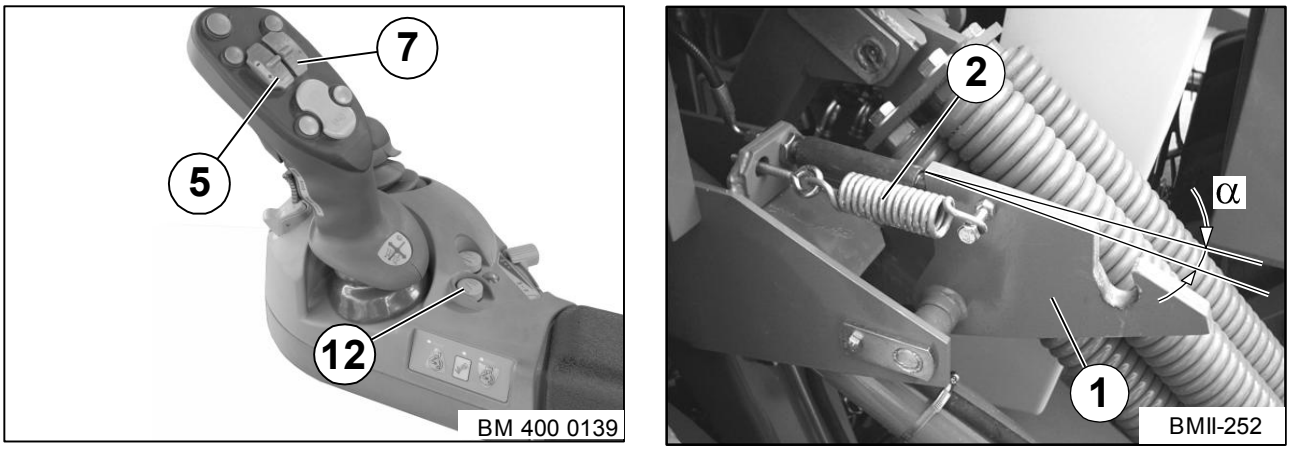


Fig. 217:

- The mowing unit drives must be turned off.

All mowing units can coast down after the mower drives are turned off. Wait for the mowing unit to come to a complete stop.

- Using the (5) keys with (12) key pressed on the multi-function lever, move the left mowing unit from headland position to transport position.
- Using the (7) keys with (12) key pressed on the multi-function lever, move the right mowing unit from headland position to transport position.

Note

The lifting cylinders are fitted with a hydraulic cushion. That means the lateral mowing units slow before they reach the locking pawl (1).

The keys on the multi-function lever should therefore be held 2 seconds longer than any motion is discernable on the mowing units.

10.6.4 Check interlock

Danger!

Check interlock

Effect: Danger to life, serious injuries or serious damage to the machine.

In transport position the lateral mowing units must be folded back and locked mechanically into vertical position. In addition the mowing units must be raised as far as the stop device. Once folded back check the position of the mowing units.

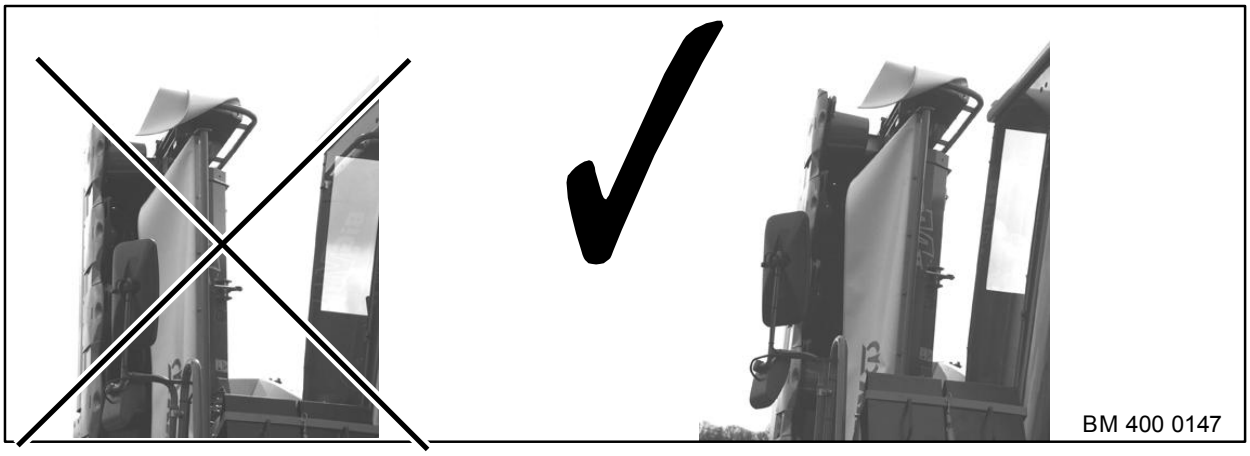


Fig. 218:

10.7 Raising the Front Mowing Unit to Transport Position

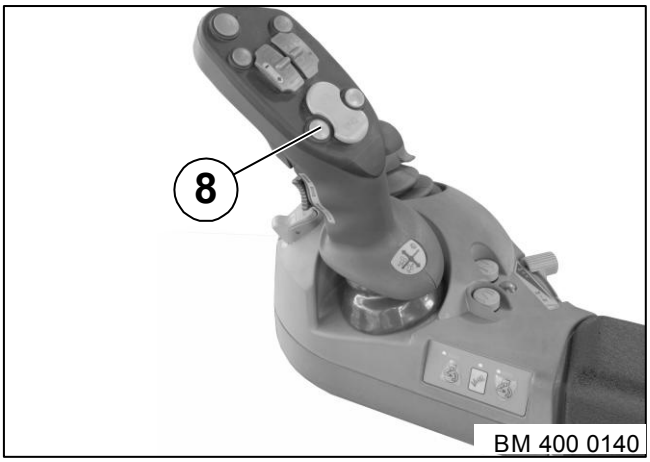


Fig. 219:

- Press the (8) keys briefly. The mowing unit is raised to transport position

10.8 Mowing

Danger!

Unexpected motion of cutting tools or mowing units and forcibly ejected stones during operation.

Effect: Danger to life, injuries or damage to the machine.

- **The mowing units are suitable for and intended for cutting crops growing on the ground!**
- **To prevent any of the mowing units from overloading, when operating a single mowing unit do not drive faster than you would if you were operating all mowing units simultaneously.**
- **The mowing units are not suitable for mowing embankments!**
- **The support skids must rest on the ground before start-up and during work!**
- **Always check the protective devices for damage before the machine is used. Replace damaged protective devices immediately.**
- **Move the protective devices into their protective positions.**
- **Do not use the machine until you are absolutely sure that neither persons, animals nor objects are in the danger zone of the mowing units.**

Danger!

When performing repair, maintenance or cleaning work on the machine , or in the case of technical intervention, drive elements may start moving.

Effect: Danger to life, injuries or damage to the machine.

- **Work on the cutter blades or their fastenings must only be performed with the drive stopped and the cutting discs and drums stopped.**
- **Switch off the mowing unit drives**
- **Switch off the engine and remove the ignition key.**
- **Wait until the cutting discs and/or drums have come to a complete stop**
- **Remove the ignition key!**
- **Secure the machine against accidental start-up and against rolling!**
- **Support the lifted mower bed! Never step under suspended loads!**
- **Safe operation is only guaranteed if the blades have been fitted according to the instructions!**
- **Always check the mowing unit for damaged, missing or worn blades, retaining bolts, leaf springs and cutting discs/blade drum before starting operation; replace any parts that are damaged, missing or worn!**

Precondition for mowing:

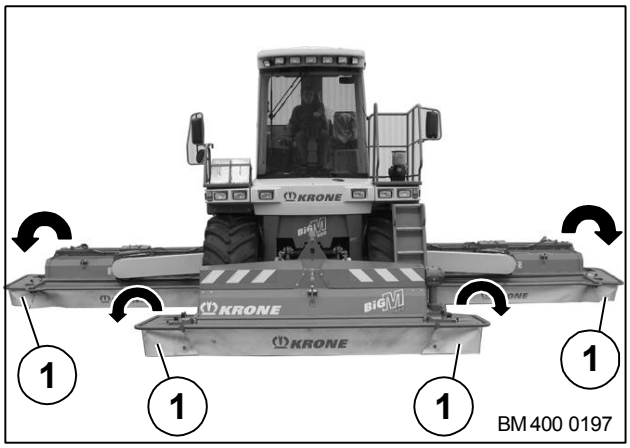
- Open the shut-off valve on the front outrigger.
- Starting the engine
- Move release switch for "Road/field" to position II (field mode).
- Move the mowing units to the working position.
- The guard cloths must be in the working position.
- Move the "Travelling gear" release switch to position II (on).
- Switch on the mowing unit drives.
- Move the "Parking brake" release switch to position I (released).
- Increase rpms to working speed.
- Drive into the crop.
- The travel speed during mowing is determined by usage conditions (soil conditions, height, density and nature of the crop)

Note

Reverse travel in Field mode!

The disc mowers are designed to travel forwards. If the road safety switch is in field position, the mowing units are automatically lifted out when the machine is reversed.

10.8.1 Moving the Guards into Working Position



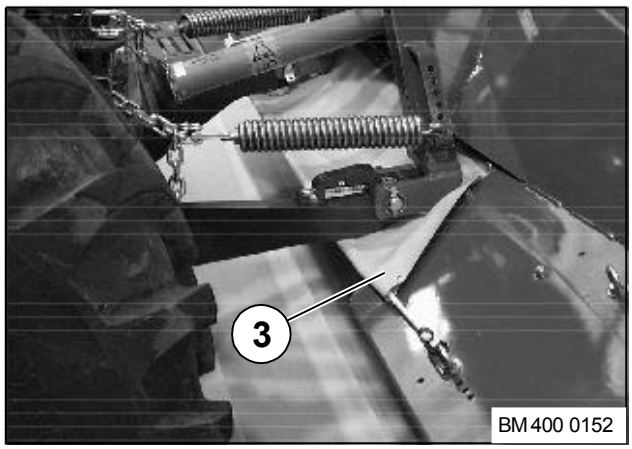


Fig. 220:

- Switch off the engine. Remove the ignition key!
- Secure the machine against accidental start-up and against rolling!
- Check the guard cloths (1.3) regularly.
- Replace worn or damaged guard cloths.
- The guard cloth (3) must be tightened each time before using the mower so that it cannot be caught by the conditioner auger.

Note

The protective equipment on the mowing units, e.g. cloths and hoods, protects against flying stones and similar objects and also prevents access to dangerous parts.

Fold down the side plates (1) before operation.

10.8.2 Semi-automatic mode

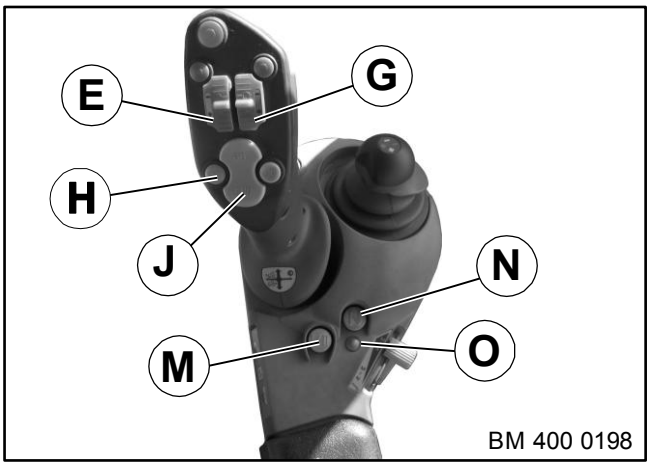


Fig. 221:

In semi-automatic mode, the mowing units can be switched step by step from working position to headland position by using the keys (E, G, H).

With the semi-automatic mode switched off when lifting, the mowing units are automatically lifted from working position to headland position.

- The semi-automatic mode is activated by pressing the (N) key (pilot lamp (O) lights up).
- By pressing the (N) key again, the semi-automatic mode is exited and the pilot lamp (O) goes off.

Note

When operating the Lift All Mowers key (J), it is not possible to lift the mowing units step by step in semi-automatic mode. Even in semi-automatic mode, all mowing units are automatically lifted from mowing position to headland position.

10.8.3 Mowing with Individual Mowing Units

The following options are available for mowing remaining pieces.

- Lift the mowing units that are no longer required for mowing into headland position. To do this, activate the appropriate keys on the multi-function lever.
- The front mowing unit alone can be used to mow small parcels of crop or narrow sections in open fields. The lateral mowing units then remain in transport position.

10.8.4 Quick stop

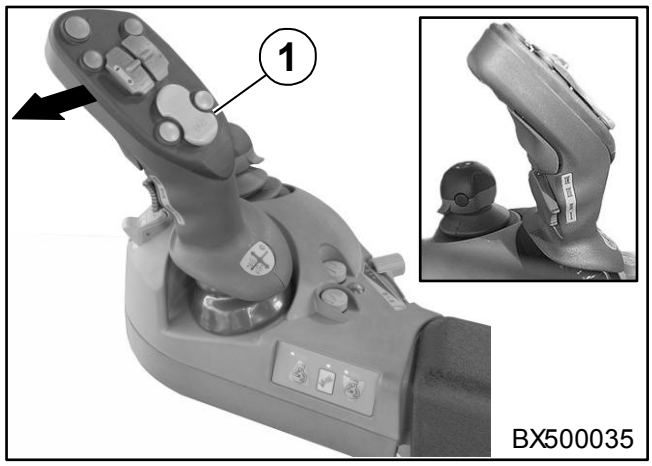


Fig. 222:

Activating quick stop

- Move the multi-function lever (1) to the left while driving.

The machine decelerates to a complete stop.

10.8.5 Fast direction change (fast reversing)

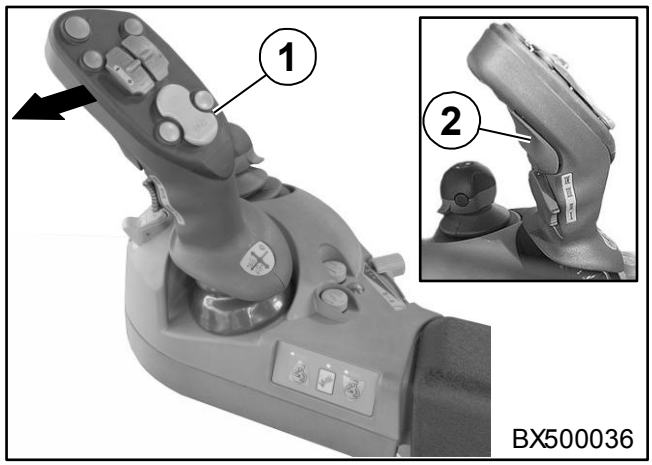


Fig. 223:

Activating fast reversing

- While travelling press the activation button for the travelling gear (2) and keep it pressed, move the multi-function lever (1) to the left and back to the middle position.

The forage harvester decelerates down to standstill and accelerates in the opposite direction to approx. 70% of the previous travelling speed.

Note

Fast reversing is possible only in the field mode.

10.8.6 Switching Axle Separation On and Off

Switch on axle separation to prevent the wheels from spinning on slippery surfaces. Axle separation is only available in Field mode.

Prerequisites for activating the axle separation:

- Road/field release switch must be in the field mode position
- Travelling gear release switch must be switched on.
- Travel speed must be less than 14 km/h.

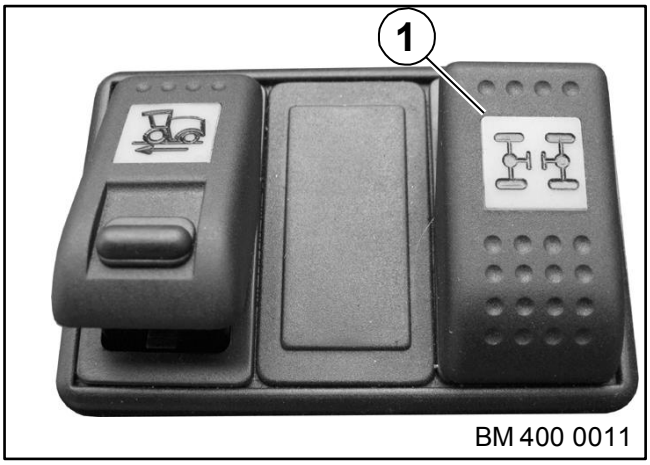


Fig. 224:

Switching on the axle separation

Actuate the axle separation button (1) – axle separation is switched on

The symbol (axle separation active) appears in the display of the Info centre.

Switching off the axle separation

- Actuate the axle separation button (1) again.

The icon (axle separation active) appears in the display of the Info Centre.

11 Adjusting the mowing units

11.1 Special Safety Instructions

Danger!

When performing repair, maintenance or cleaning work on the machine , or in the case of technical intervention, drive elements may start moving.

Effect: Danger to life, injuries or damage to the machine.

- **Switch off the engine and remove the ignition key.**
- **Secure the machine against accidental start-up and against rolling!**
- **The cutter blades can continue to rotate after the drive has been switched off. Only approach the machine once the work tools have come to a complete standstill!**
- **After completing maintenance work reattach all safety devices properly.**
- **Avoid skin contact with oil and grease.**
- **Seek medical help immediately should injuries caused by oil escaping under pressure occur.**

11.2 Adjusting the cutting height

The cutting height can be adjusted to different soil conditions. Each of the mowing units is adjusted individually for height.

Before making settings for cutting height, the hydraulic axle suspension must be in the mowing position. **(See Info Centre chapter "Quick Access to Hydraulic Axle Suspension".)**

Note

Good cutting pattern

For a good cutting pattern, adjust the cutting height to the same height on all mowing units

11.2.1 Front mowing unit

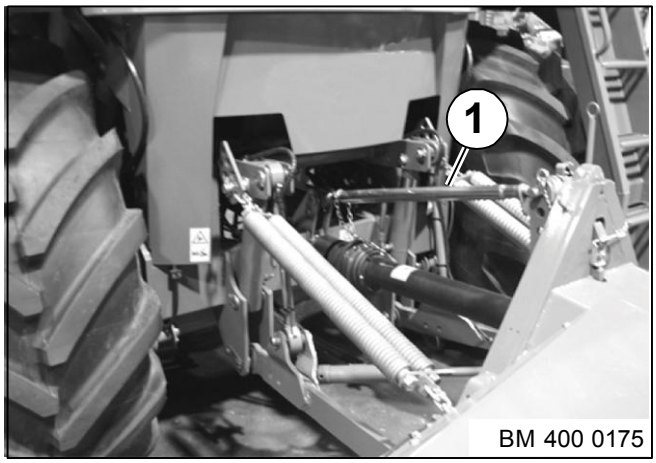


Fig. 225:

The cutting height is adjusted via the top link (1).

To do this:

- Lower the front mowing unit into working position
- Rotate the top suspension arm (1)

Top suspension arm longer = smaller cutting height

Top suspension arm shorter = bigger cutting height

11.2.2 Adjusting the Lifting Height

11.2.2.1 Front mowing unit

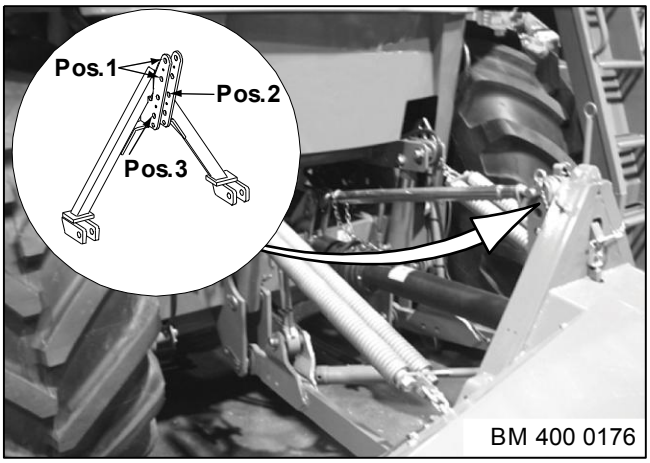


Fig. 226:

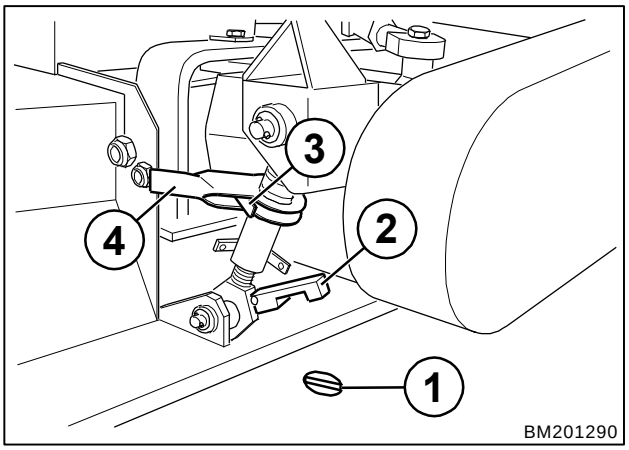
The front mowing unit can be suspended in several positions by means of the „Weiste' triangle. This causes the front mower to lift up to a higher or lower position.

- In the upper position (1), the front mower lifts to a higher position
- At mid position (2) the mower is in the normal position
- In the lower position (3), the front mower lifts to a lower position

By linking the upper rod into the lower positions (2, 3) on the 'Weiste' triangle, it is possible to obtain a smaller adjustment to the front mower inclination. This keeps the cutting height constant when making ground adjustments on very uneven land

11.2.3 Adjusting the cutting height

11.2.3.1 Lateral Mowing Unit



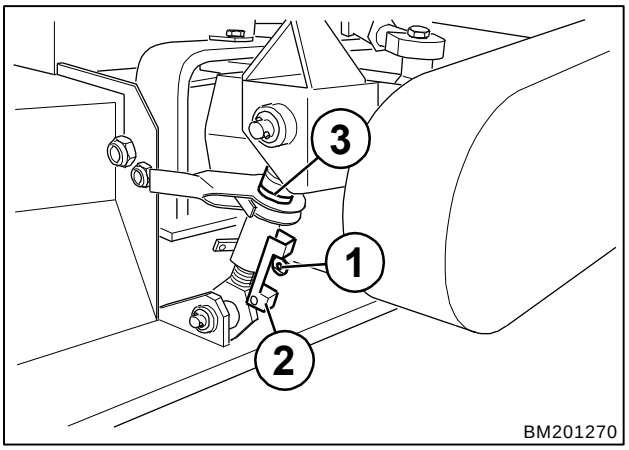


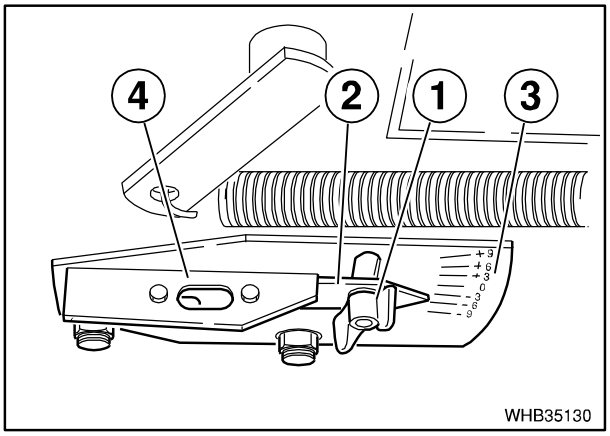
Fig. 227:

- Lower the lateral mowing unit into working position.
- Remove the linch pin (1).
- Put the locking clip (2) to one side.
- Set the direction of rotation for the setting ratchet (4) on the lever (3).

Lengthen threaded spindle = smaller cutting height

Shorten threaded spindle = bigger cutting height

- Twist the threaded spindle (3), until the locking clip (2) can be inserted.
- Secure the locking clip (2) with the linch pin (1).



Display (for example)	Theoretically Cutting height	To suit usage conditions
+6°	approx. 11 cm	High cut field forage moist
+3°	approx. 8 cm	dry ground
+0°	approx. 6 cm	Field forage Dry conditions Normal conditions
-3°	about 4 cm	
-5°	approx. 3 cm	Increasing Low cut entails risk of damage to sward

You can set and read off the cutting height you require using the spirit level.

- Unscrew the wing screw (1).
- Set indicator (2) to the required angle on the angle scale (3).
- Tighten the wing screw.
- Change the mower setting on the setting ratchet until the bubble (4) is in the centre.

Note

One revolution on the top suspension arm sleeves of the lateral mowing units

(12 ratchet movements) corresponds to about 4 revolutions on the top suspension arm sleeve of the front mowing unit.

Additional adjusting skids should be fitted.

11.3 Adjusting the Compensation Springs

Danger!

Setting on the compensation springs

Effect: Danger to life or serious injuries

- **The compensation springs should be adjusted only while the front mower is in the transport position. In the working position the compensation springs are subject to high tensile stress.**
- **Severe injury can be caused if the compensation springs are removed while in the working position.**
- **The lower threaded blocks on the compensation springs must be fully screwed in.**

The ground pressure for the cutter bar is adjusted to local conditions by means of the compensation springs. In order to protect the sward the load on the mowing spar must be relieved so that it does not jump when mowing, yet does not leave any skid marks on the ground.

11.3.1 Front mowing unit

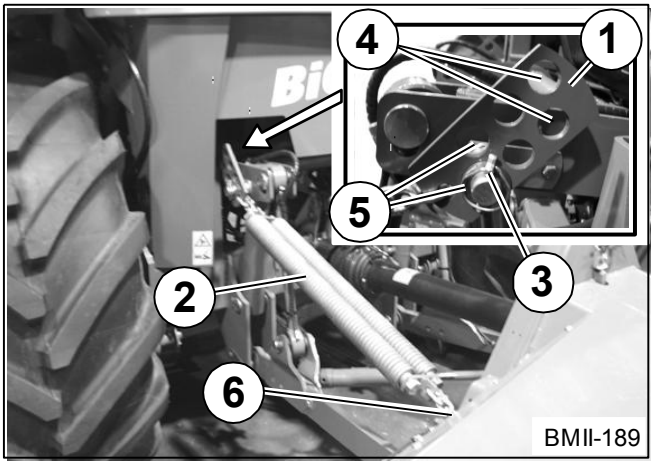


Fig. 228:

- Move the hydraulic axle suspension to the mowing position (see Info Centre chapter entitled "Quick Access to Hydraulic Axle Suspension")
- With the sideshift option, the front mowing unit must be in the central position. (see Section 3.4, multi-function lever).
- The front mowing unit must be put into the transport position before you adjust the adjusting piece (1).
- Unscrew the linch pins (3).
- Unhook the spring assemblies (2).
- Insert the adjustment piece (1) into the required hole.
- Insert the spring assemblies (2) and secure with the linch pin (3)
- The spring assemblies (2) are fitted on the side of the mower into the top hole (6).

If the adjusting piece (1) is in the upper position (4), this means there is less spring tension, and thus, increased ground pressure

If the adjusting piece (1) is in the lower position (5), this means there is greater spring tension, and thus, reduced ground pressure

11.3.2 Lateral Mowing Unit

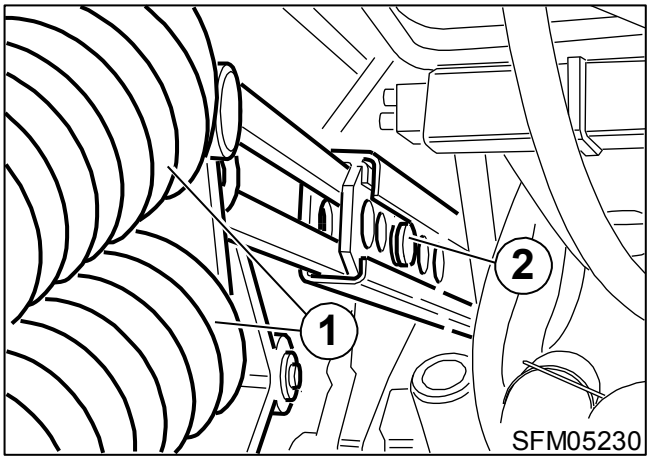


Fig. 229:

The load on the lateral mowing units is compensated by means of the four tension springs (1) on the left and right outriggers. The ground pressure can be adjusted by reinstalling the bolts (2).

- Lift the lateral mowing units over the headland position, so that the compensation springs are not under tension.
- Support the lateral mowing unit
- Pull out the bolts (2) after you have removed the linch pin.
- If the bolts are moved further to the left: lower ground pressure
- If the bolts are moved further to the right: the ground pressure is increased
- Insert the bolts (2) and secure with the linch pin.

Note

When driving on the road fit the maximum spring compensation bolts at level 3 (centre hole)

11.4 Adjusting the Tedder Speed

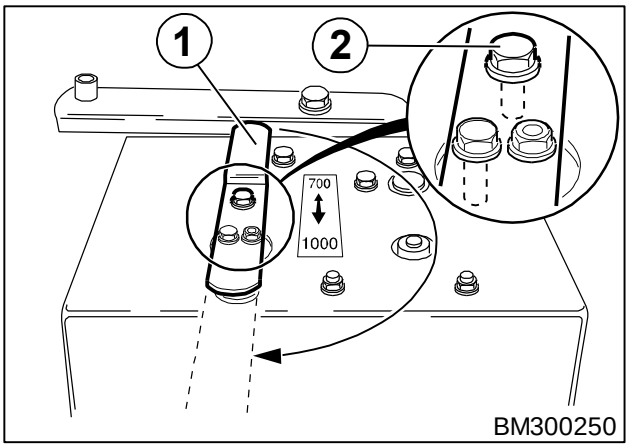
Danger!

Settings on the machine

Effect: Danger to life, injuries or damage to the machine.

- **Setting tasks must only be performed when the drive is switched off and the engine is at a standstill! Remove the ignition key!**

11.4.1 Lateral Mowing Unit



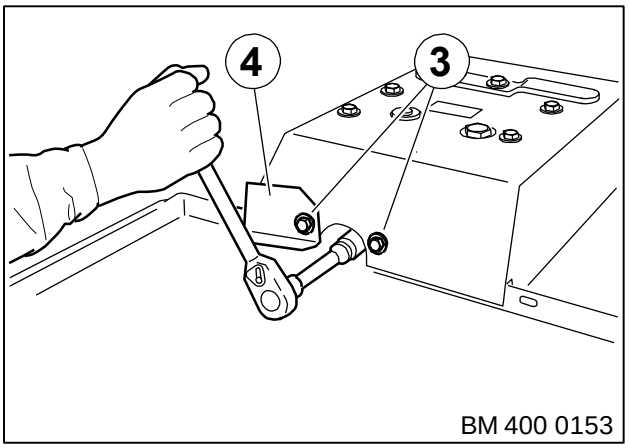


Fig. 230:

Two conditioner speeds can be set on the main gearbox. This affects the conditioning effect and the power consumption.

Normal operation 700 rpm.

Maximum operation: 1000 rpm.

Only use the speed 700 r.p.m. during the running in phase of the engine of approx. 25 hours.

- Unscrew the screw (2) on the actuating lever (1).
- Turn the actuating lever 180 degrees.
- Fasten the actuating lever with the screw (2).

To synchronise the gear wheels while the change is being made, loosen the screws (3), open the flap (4) and turn the drive shaft using a suitable tool.

11.4.2 Front mowing unit (CV)

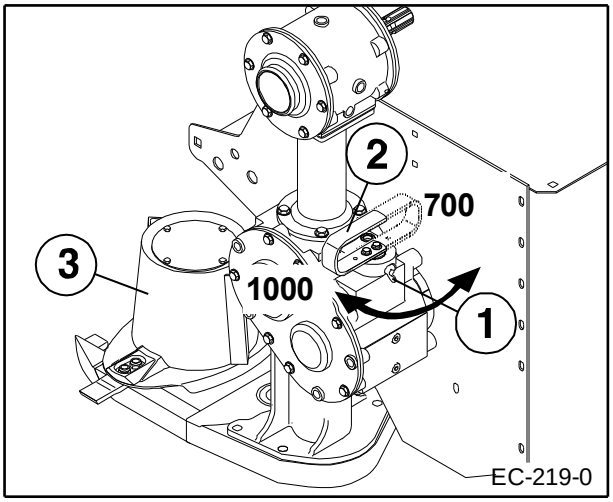


Fig. 231:

Two conditioner speeds can be set on the speed gearbox. This affects the conditioning effect and the power consumption.

Minimum speed: 700 rpm.

Maximum speed: 1000 rpm.

- Unscrew the wing screw (1) from the actuating lever (2).
- Turn the actuating lever (2) 180 degrees. (in doing so turn the mower drum (3) so that the complete actuating lever can be turned.
- Secure the actuating lever (2) with the wing screw (1).

11.5 Adjusting the conditioner plate

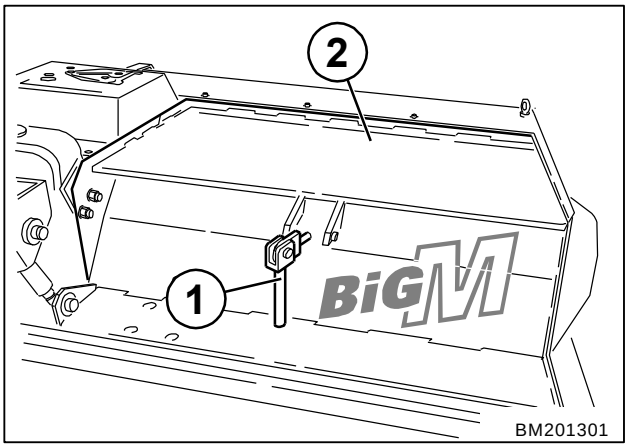
Caution!

Damaged or missing tines

Effect: Damages to the machine.

- **Bent and broken prongs cause an imbalance.**
- **Straighten any bent tines.**
- **Replace any broken tines.**

(Big M CV)



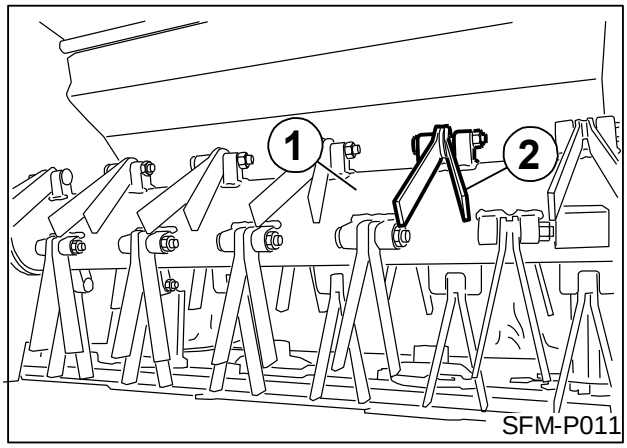


Abb. 232:

The conditioning of the mowed crop can be influenced by adjusting the conditioning plate through the crank (1). The adjustment depends on the desired degree of conditioning of the crop:

Clockwise rotation: Degree of conditioning is increased

Anticlockwise rotation: Degree of conditioning is decreased

Note

Checking the conditioner auger

Effect: Longer service life

- **Before putting into operation, always check the conditioner roller (1) for damaged V-tines (2).**
- **Straighten any bent tines.**
- **Replace any broken tines.**
- **Check the bearing bolts and bushes on the prong bearings. To prevent the loss of prongs, always replace bearing bolts and bushes in good time.**

11.6 Adjusting the roller conditioner (optional extra/Big M CRI)

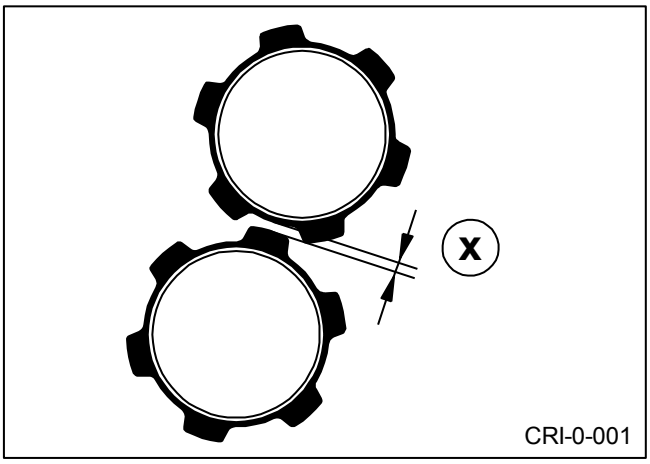


Fig. 233:

General

The roller conditioner is supplied for use with leguminous vegetation or other leaf crops.

The conditioning intensity is adjusted by the setting spindle (1). The setting spindle (1) is used to change the distance or contact pressure of the rollers. The minimum distance (x) between the rollers must always be at least 4 mm.

11.6.1 Adjusting the roller distance

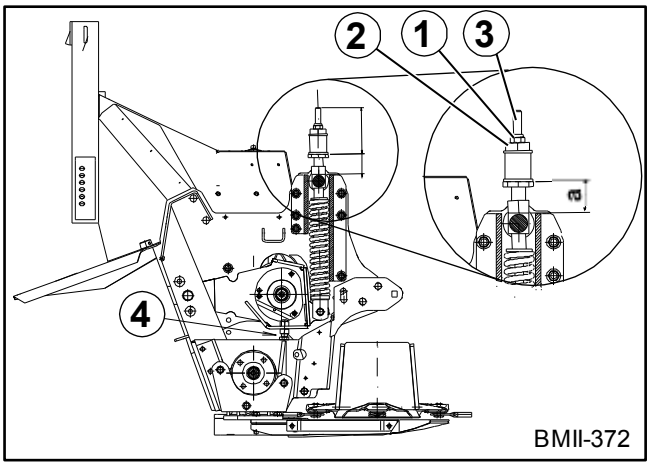


Fig. 234:

- Loosen the locknut (1) with a hex key (W/F 24).
- Turn the adjusting nut (2) on the threaded spindle with a hex key (W/F 46).

Clockwise rotation: Roller distance is reduced.

Anticlockwise rotation: Roller distance is increased.

- Retighten the locknut (1) with a hex key (W/F 24).

11.6.2 Adjusting the roller pressure

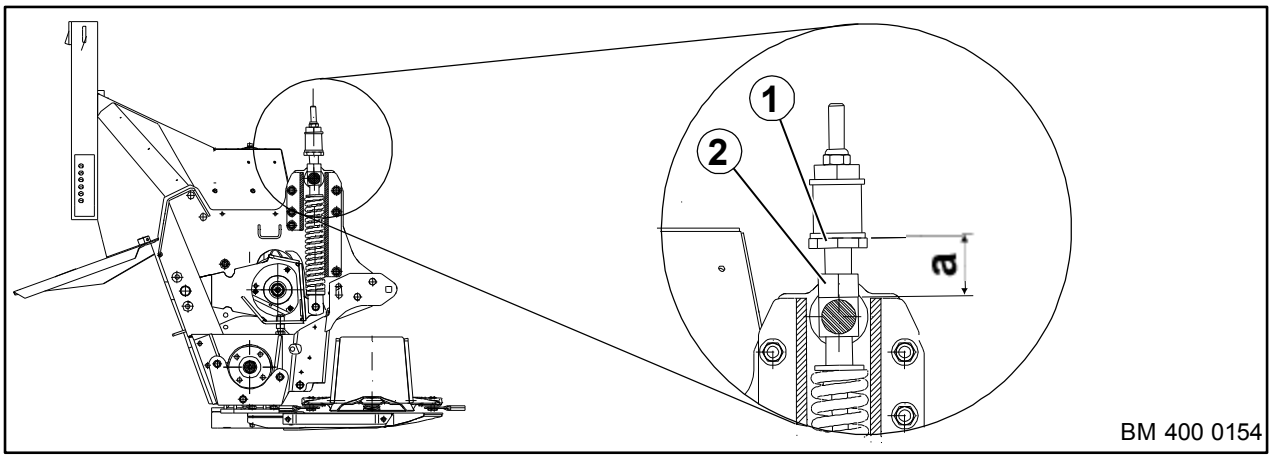


Fig. 235:

- Loosen the locknut (2) with a hex key (W/F 41).
- Turn the spindle on the screw head (1) with a hex key (W/F 55).

Clockwise rotation: Greater insertion force

Anticlockwise rotation: Less insertion force

- Retighten the locknut (1) with a hex key (W/F 41).

Note

Optimising crop flow

- **Dimension "a" must be within the range 60 - 75 mm. If the distance is set to less than 60 mm, the upper roller will not be able to swing out far enough, which will impede crop flow.**
- **Reset the roller distance each time you make an adjustment.**

11.7 Setting of the Scraper on the Cross Conveyor (Optional)

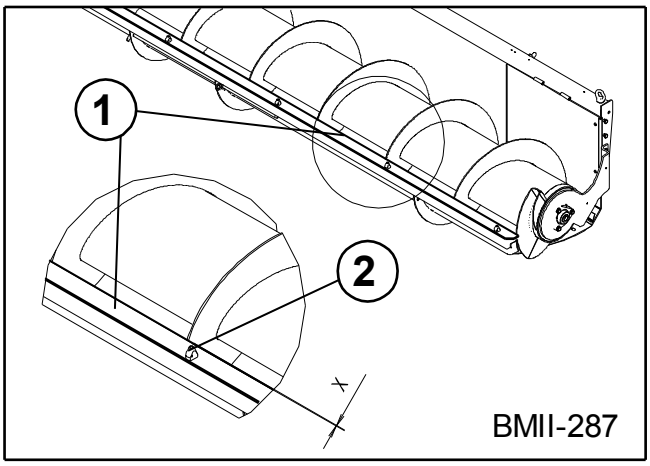


Fig. 236:

The scraper (1) on the cross conveyor (right and left) are used to scrape off crop and prevent the cross conveyor from becoming clogged.

To achieve optimum working results, a dimension of **X= 0-2 mm** must be maintained.

To adjust the scraper:

- Loosen the screw (1)
- Push the scraper into the oblong hole until a dimension of **X= 0-2 mm** is reached.
- Tighten the screw (1) again.

11.8 Adjusting the swath width

The swath width is adjusted by means of the swath plates at the rear of the disc mowers.

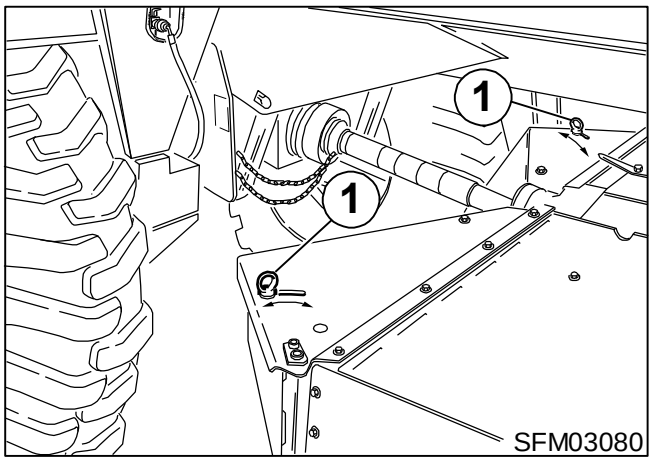


Fig. 237:

11.8.1 Front mowing unit

Set the swath width so that the mower track is kept free.

- Unscrew the ring nut (1).
- Adjust the swath width.
- Tighten the ring nut (1) again.

Note

Swath width setting: with the swath grouping option (BSS), the swath width of the front mowing unit must be set as narrow as possible. This ensures that there is enough free space available to hold the crop of the lateral mowing units.

11.8.2 Lateral Mowing Unit

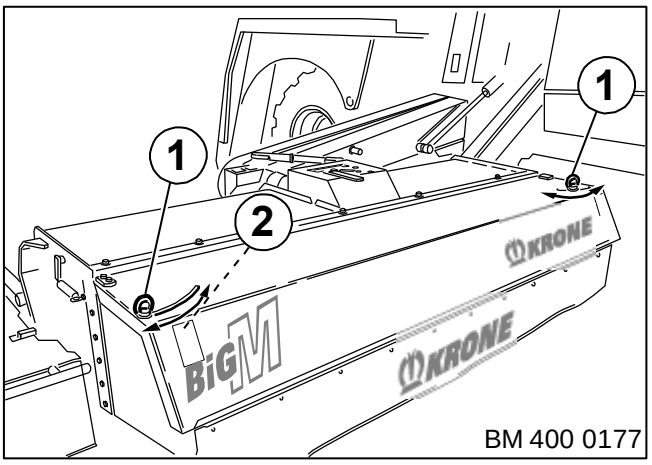


Fig. 238:

Adjust the swath width.

- Unscrew the ring nut (1).
- Adjust the swath width.
- Tighten the ring nut (1) again.

Note

Set more free space for overcut.

The narrower the swath width setting on the outer swath boards (2) of the lateral mowing units, the more free space for overcut is achieved.

11.9 Adjusting the track control arm on the lateral mowing units

Caution!

If the cutting height is 0° the distance dimension "a" between the side plate (4) and the outrigger (5) must not exceed 60 mm CV/100 mm CRI.

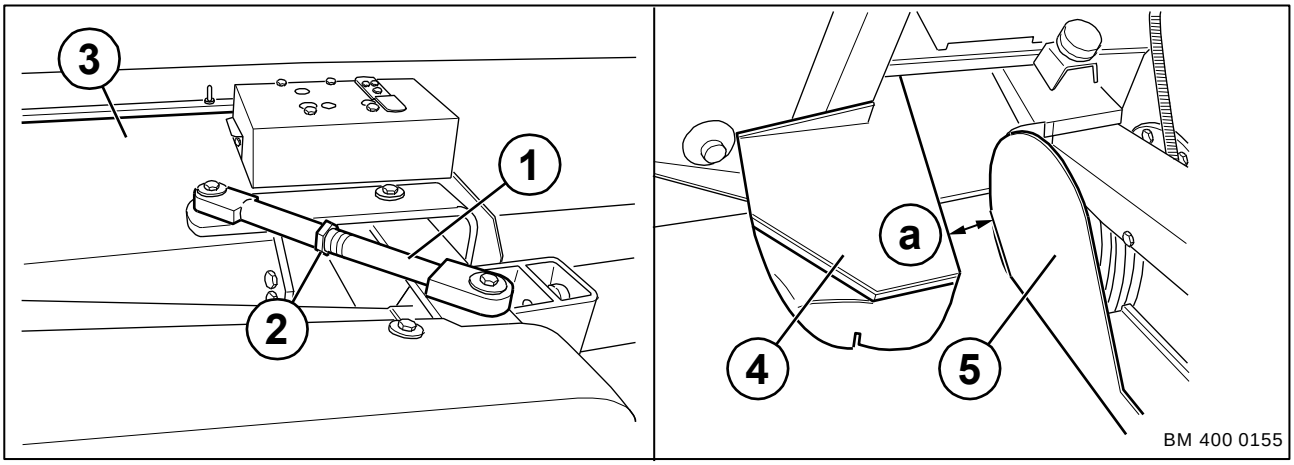


Fig. 239:

The lateral mowing units (3) are aligned by means of the track control arm (1)

- Loosen the counter nut (2) on the track control arm (1).
- Adjust the track control arm (1) until the dimension **a** between the lateral mowing unit (4) and the outrigger (5) is set to 60 mm.
- Tighten the counter nut (2) on the track control arm (1)

11.10 Deflector Plates

11.10.1 Front mowing unit

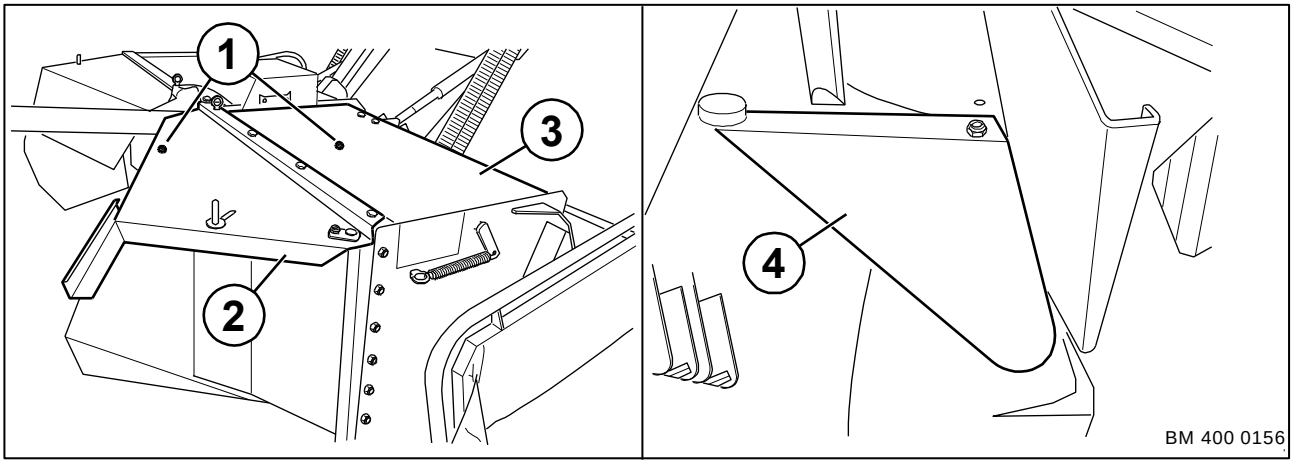


Fig. 240:

Deflector plates are located on the front mowing unit (3) in the swath former area (2); these are fitted to the housing with fastening screws (1).

- If the swathing is uneven examine the deflector plates (4) for deformation, and straighten them if necessary.

11.11 Deactivating the axle suspension

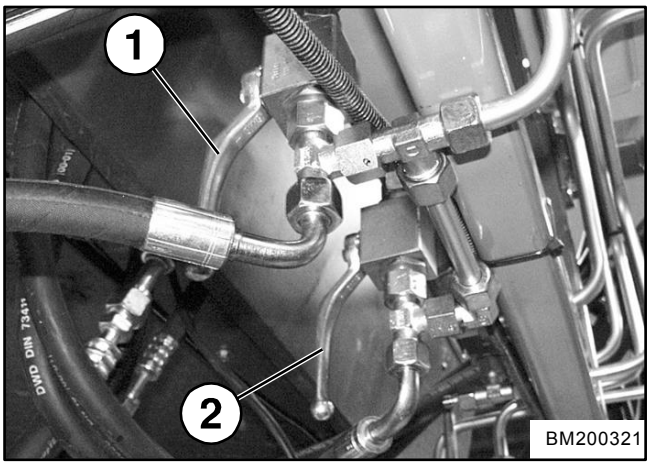


Fig. 241:

The Big M 400 front axle has a hydro-pneumatic suspension. If axle suspension is active, the two ball valves (1) and (2) are open, as illustrated in the figure.

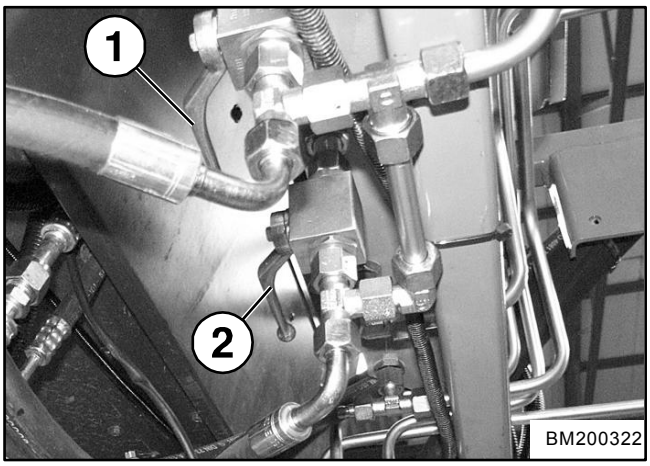


Fig. 242:

The front axle suspension can be deactivated.

- To deactivate the front axle suspension, shut the ball valve (1) for the left hydraulic cylinder and the ball valve (2) for the right hydraulic cylinder .

Note

Lowering / lifting the front axle

The front axle can be moved both with activated and deactivated axle suspension.

12 Special Equipment – Mowing Units

12.1 Converting the Tedder Deflector Plate to an Auger-Type Cross Conveyor

Danger!

When performing repair, maintenance or cleaning work on the machine, or in the case of technical intervention, drive elements may start moving.

Effect: Danger to life or serious injuries

- **The cutting discs continue to run!**
- **Switch off the engine and remove the ignition key.**
- **Secure the machine against accidental start-up and against rolling!**
- **Only use appropriate and authorised lifting gear for the installation and removal of the auger-type cross conveyor (total weight of the conveyors = approx. 300 kg).**

Note

The following description shows the installation of the auger-type cross conveyor on the right hand mower side. The installation on the left-hand mower side has to be carried out in an analogous way.

Depending on how the machine is equipped, the "tedder deflector plate" can optionally be converted to an "auger-type cross conveyor" or vice versa.

The process for converting the "tedder deflector plate" to an auger-type cross conveyor is described below.

Prerequisite:

- Lower all lateral mowing units (1) on to a firm subsoil.
- Switching off the engine
- Remove the ignition key
- Secure the machine against the possibility of rolling back.

12.1.1 Removing the tedder deflector plate

Danger!
Detaching
Effect: Danger to life or serious injuries

- **Only use appropriate and authorised lifting gear for the installation and removal of the auger-type cross conveyor (total weight of the conveyors = approx. 300 kg).**

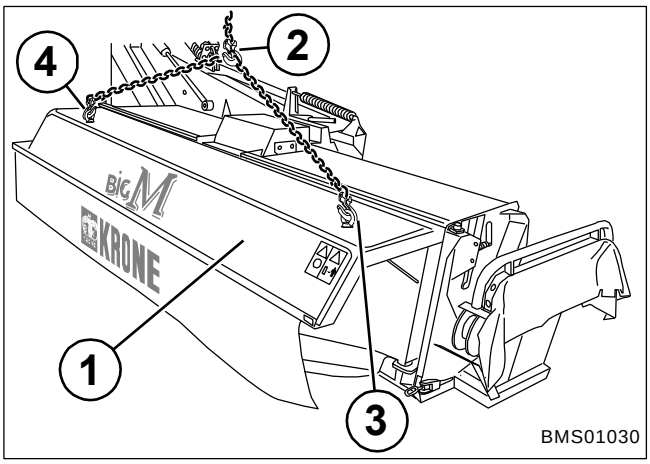


Fig. 243:

Installing the retaining chains

- Attach the retaining chains (2) to the ring bolts (3) and (4) of the tedder deflector plate (1).

12.1.2 Releasing the tension jacks

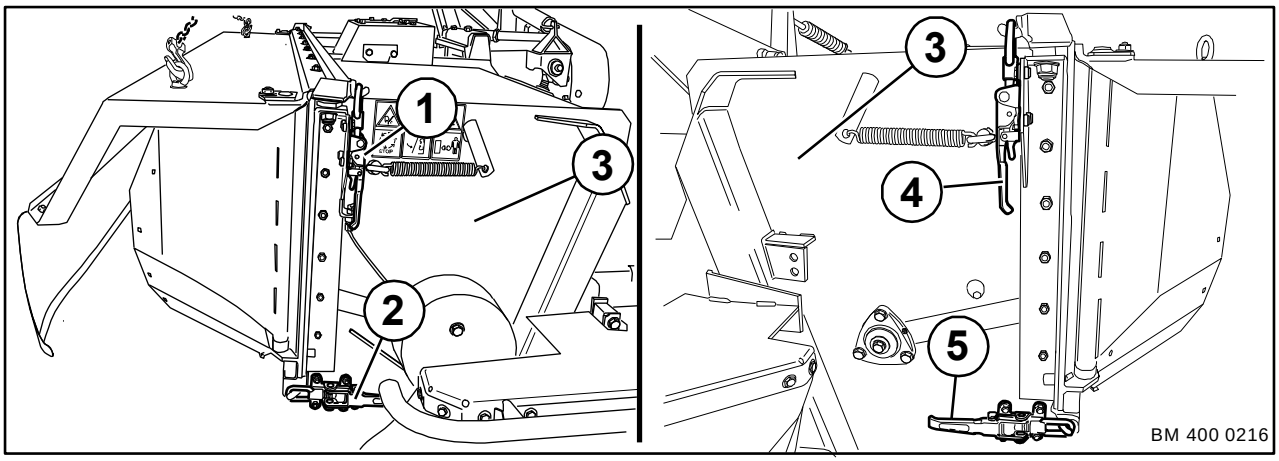


Fig. 244:

Release the tension jacks (1) and (2) located at the outer side of the mower (3).

Release the inner tension jacks (3) and (4) of the mowing unit (3).

12.1.3 Removing the tedder deflector plate

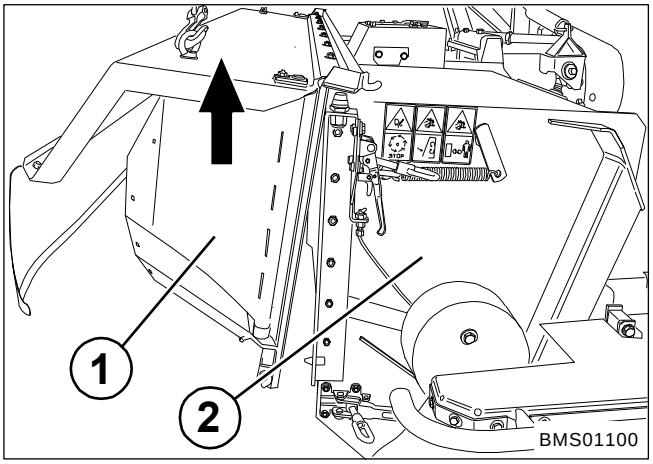


Fig. 245:

- Slightly raise the tedder deflector plate (1) and remove it sideways from the mowing unit (2).

Note
Removed tedder deflector plate
Store the tedder deflector plate (1) in a secure and dry place.

12.1.4 Checking the Tines

Caution!

Damaged or missing tines

Effect: Damages to the machine.

- **Bent and broken prongs cause an imbalance.**
- **Straighten any bent tines.**
- **Replace any broken tines.**

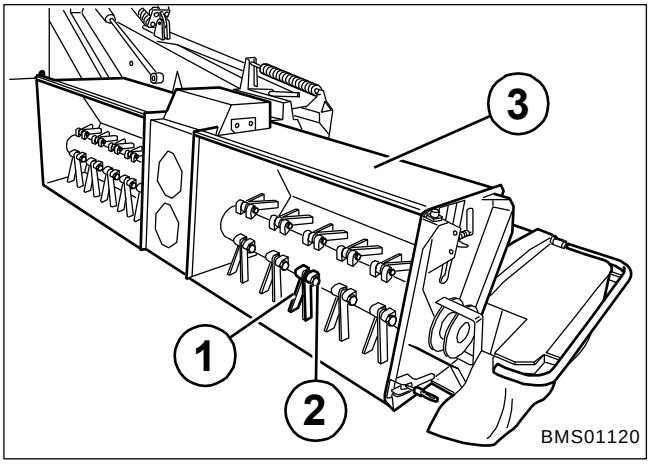


Fig. 246:

Check the V-shaped tines (1) and the retaining bolts (2) of the mowing unit (3) for damage.

12.1.5 Removing the guard

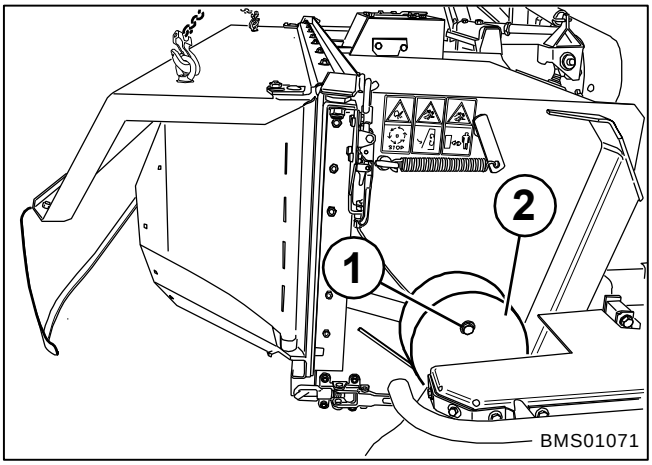


Fig. 247:

- Remove the hexagon head cap screws (1).
- Remove the guard (2) and store it in a secure place.

12.1.6 Installing the auger-type cross conveyor

</dg_bm "test">

Danger!

Attaching / detaching

Effect: Danger to life or serious injuries

- **Only use appropriate and authorised lifting gear for the installation and removal of the auger-type cross conveyor (total weight of the conveyors = approx. 300 kg).**

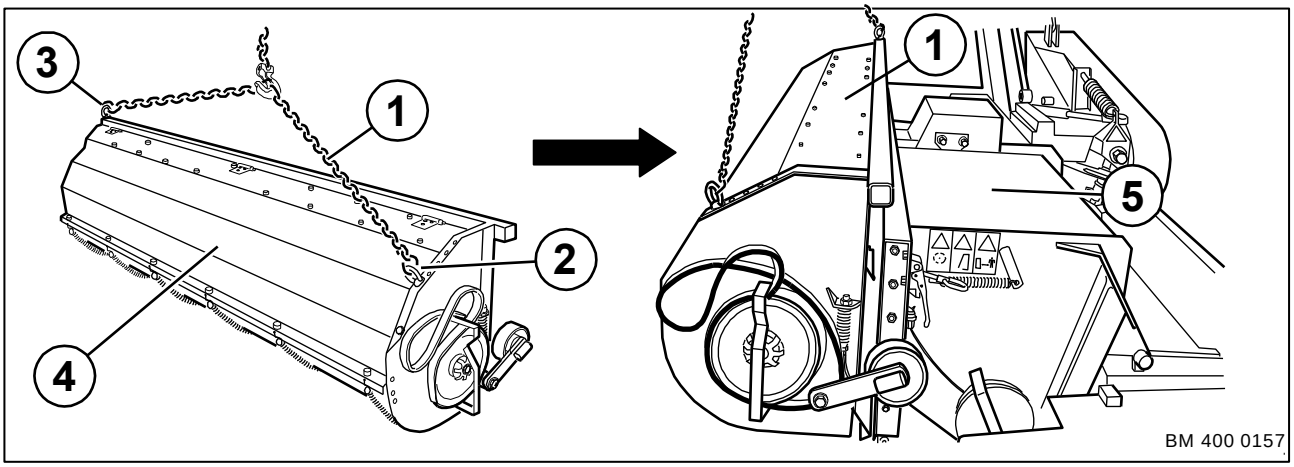


Fig. 248:

Installing the retaining chains

- Attach the retaining chains (1) to the ring bolts (2) and (3) of the auger-type cross conveyor (4).
- Slowly lower the auger-type cross conveyor (4) onto the mowing unit (5).

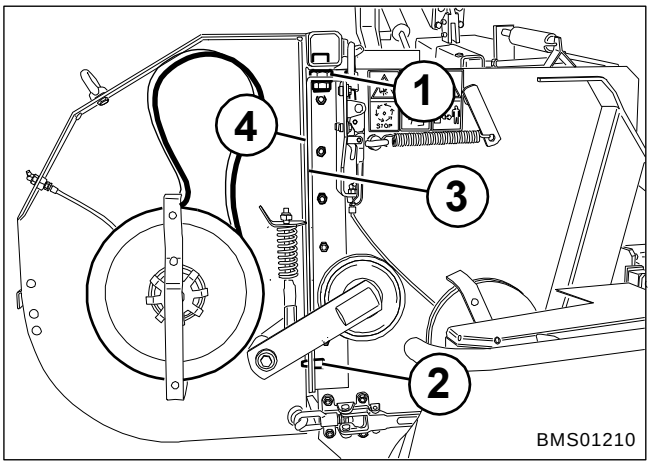


Fig. 249:

- Be sure to lower the auger-type cross conveyor into the guide pins (1) and (2).

Note

The surfaces (3) and (4) have to be flat against either side of the mowing unit.

12.1.7 Locking the tension jacks

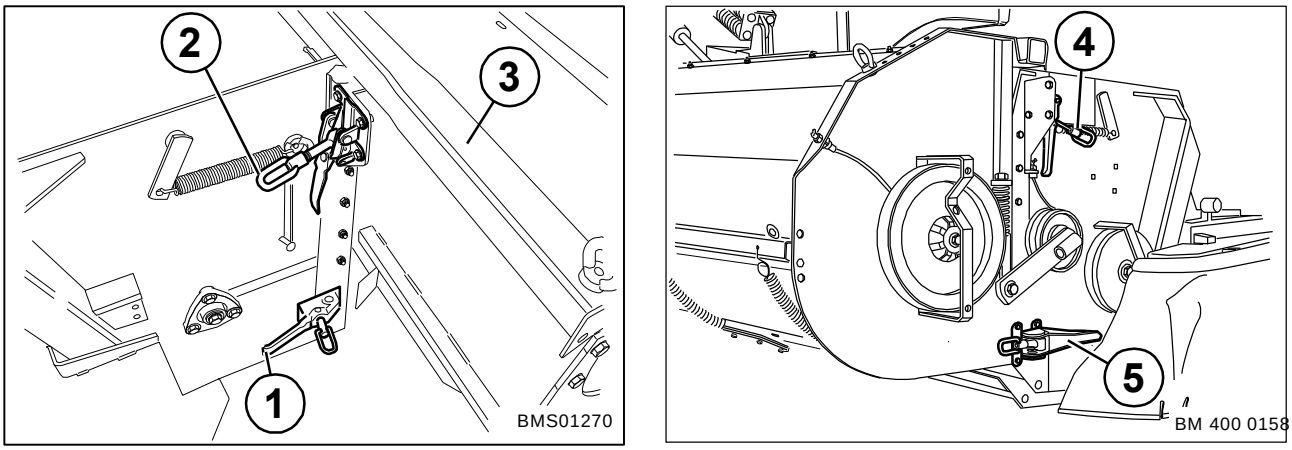


Fig. 250:

- Lock the tension jacks (1) and (2) located on the inner side of the mowing unit (3).
- Also lock the outer tension jacks (4) and (5).

Note

Be sure the tension jacks (1) and (2) are under tension when locked; retighten as required.

12.2 Tensioning the V-belts

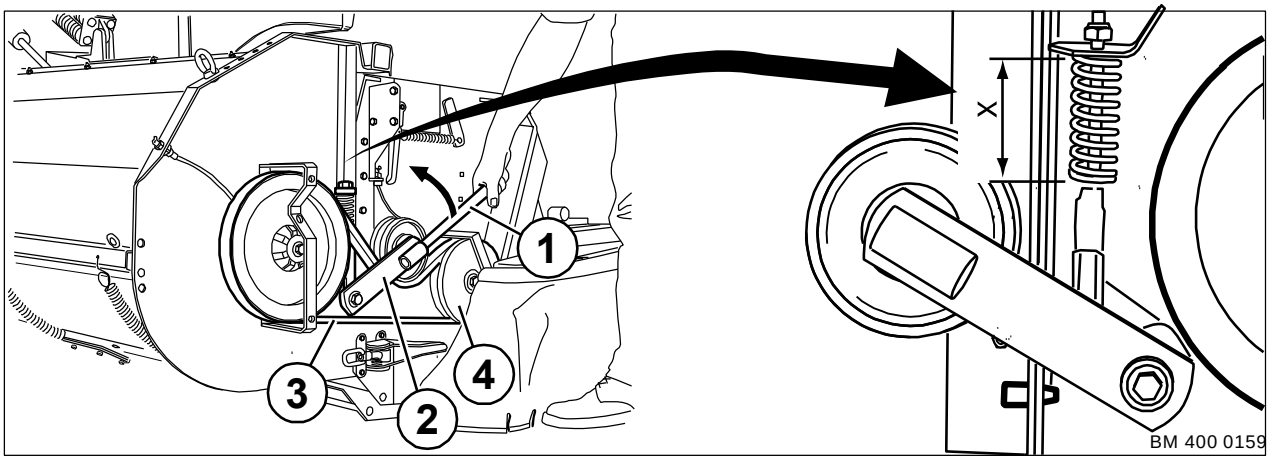


Fig. 251:

- Use the mounting lever (1) to raise the idler pulley (2).
- Place the V-belt (3) on to the pulley (4).
- Lower the idler pulley (2) slowly and withdraw the mounting lever (1).

Use the mounting lever (1) supplied in the on-board tool box.

With the V-belt under tension, dimension X has to be equal to approx. 80 mm.

12.2.1 Installing the guard

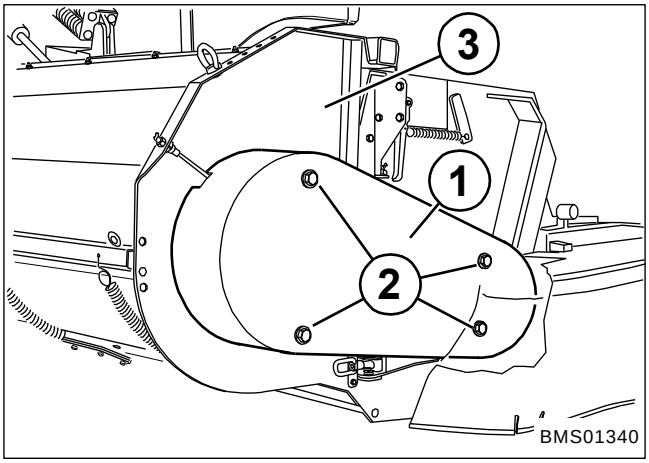


Fig. 252:

Install the guard (1) on to the mowing unit (3) using the hexagon head cap screws (2).

12.2.2 Connecting the speed sensor

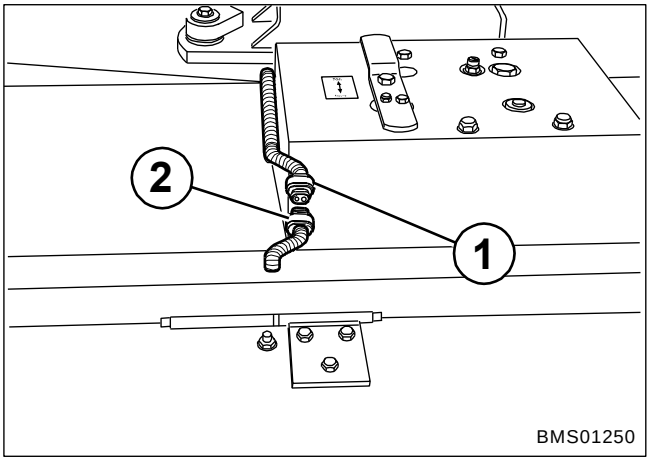


Fig. 253:

- Connect the speed sensor cable (1) to the speed sensor cable (2) of the auger-type cross conveyor.

12.2.3 Removing the floor plates

Danger!

No one is permitted in the danger zone when lifting, lowering or folding up mowing units, or when turning on drives.

Effect: Danger to life, serious injuries or serious damage to the machine.

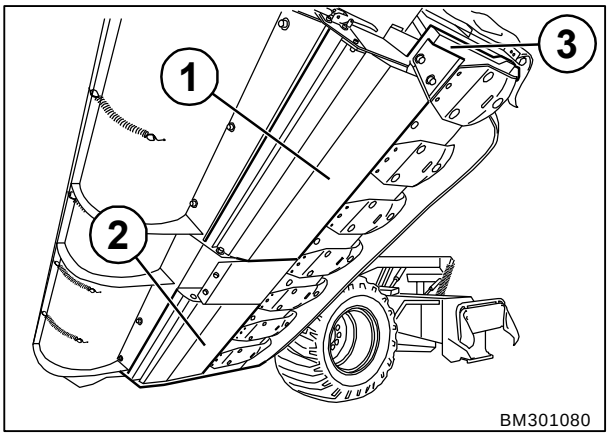
- **Do not lift, lower or fold up the mowing unit until you are absolutely sure that neither persons, animals nor objects are in the swivel range of the mowing unit.**
- **Switch off the engine and remove the ignition key.**
- **Secure the machine against accidental start-up and against rolling!**
- **Lock the mowing units against lowering using appropriate retaining chains.**

or

- **Protect the mowing units against lowering by suitable means (for example a support block)**

Note

The following steps are described only for the right-hand side of the later mowing unit. The process of removing the floor plates for the left lateral mowing unit is analogous to the right side.



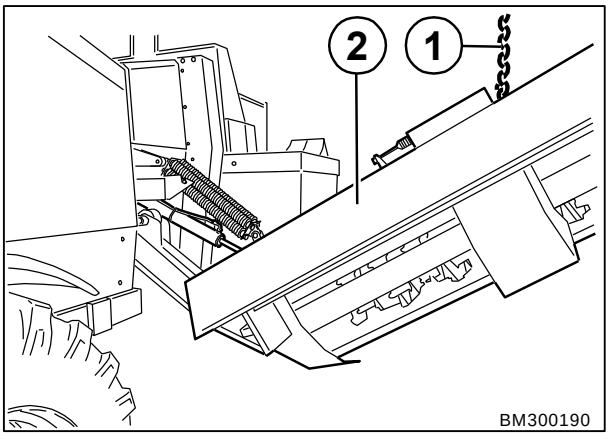


Fig. 254:

To prevent stones or other foreign bodies from accumulating inside the feed channel chamber during the operation of the augers, the floor plates (1) and (2) of mowing unit (3) can be removed as follows:

- Raise the lateral mowing unit (1).
- Fit retaining chains (2) to the lateral mowing unit (1).

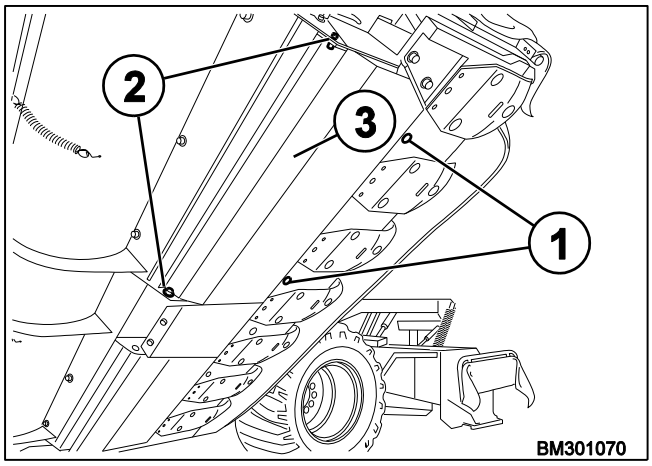


Fig. 255:

- Remove the hexagonal nuts of the bolts (1).
- Remove the connecting bolts (2).
- Carefully the remove floor plate (3) to the rear.
- Store floor plates, bolts and nuts in a secure place.
- Remove the retaining chains
- Lower the lateral mowing units into working position

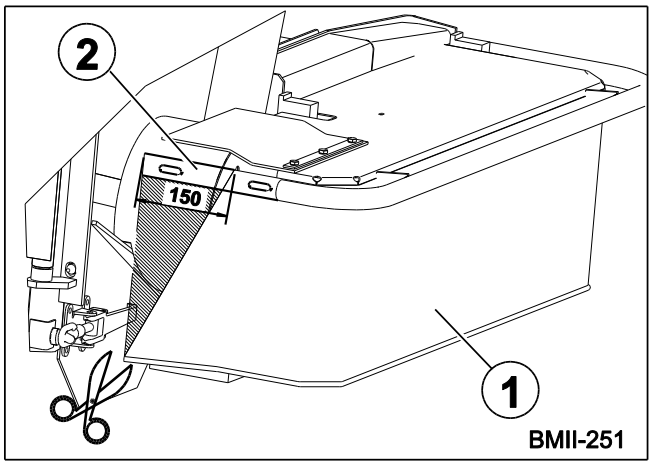


Fig. 256:

After the cross conveyor is attached, the side guard cloth (1) must be cut off on the right and left mowing unit. It may also be necessary to shorten the clamping strap (2) appropriately.

12.2.4 Relaying the Lubrication Lines

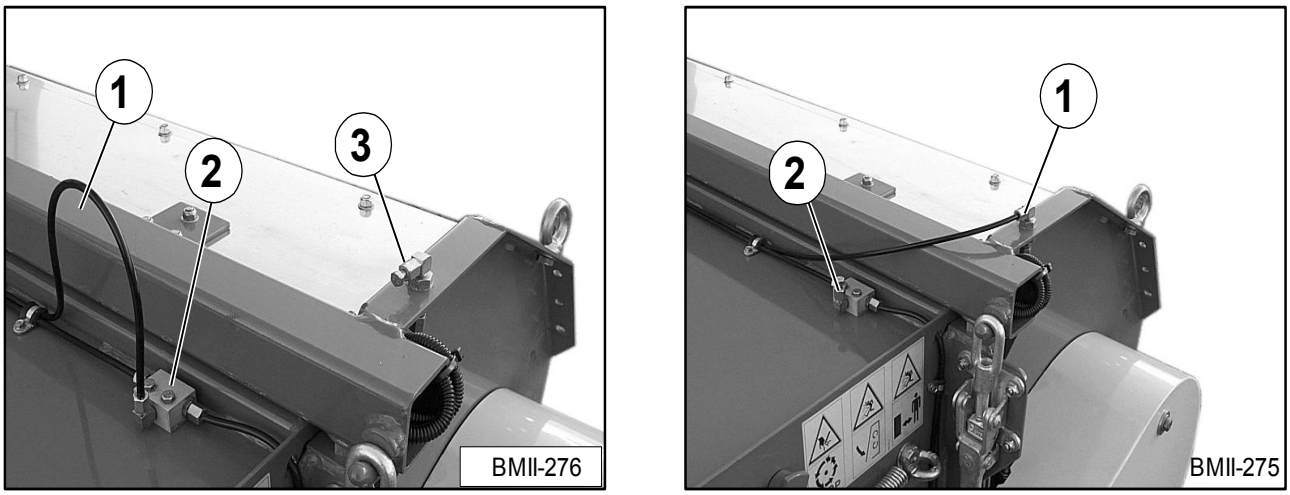


Fig. 257:

When the machine is converted from a "Tedder deflector plate unit" to an "Auger-type cross conveyor", the lubrication lines must be relaid as described below.

- Loosen lubrication line (1) at the T-screw connection (2).
- Loosen the sealing screw (3) on the lubricating point connection.
- Unto the lubrication connection (1) to the auger bearing (BSS).
- Install the sealing screw (2) on the T-screw connection

12.2.5 Installation Instructions – Bulge Bags for Big M 400 with BSS

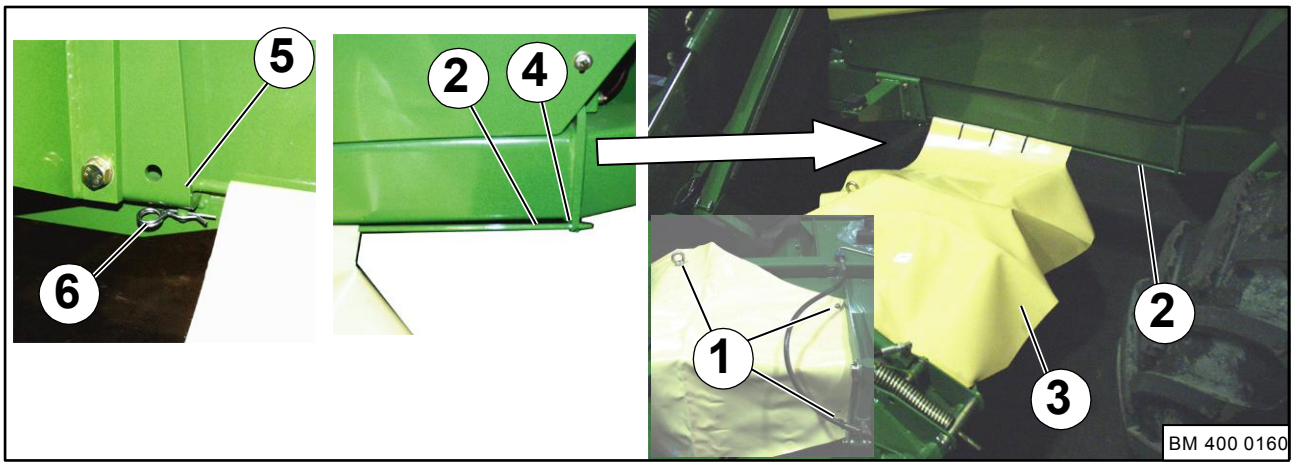


Fig. 258:

Placing bulge bags on the right and left auger hoods reduces the amount of dirt in the cooling air.

Installation instructions:

- Screw bulge bags securely onto the auger hoods (1). (Install coach bolts from below.)
- Pull the rod (2) through the eyes of the bulge bag (3)
- Insert the rod (2) from behind into the hole on the frame (4). Insert the rod (2) into the hole on the mowing unit support from above in front (5) and secure it with the spring cotter pin (6).

12.2.6 Switching on the auger monitoring mode

Danger!

Do not allow the engine to run in enclosed areas.

Effect: Danger, toxic exhaust!

- **Only start the engine from the driver's seat.**
- **Always make certain there is no one in the danger zone of the machine.**
- **Activate the horn.**
- **Never allow the engine to run in closed rooms without an extraction unit.**
- **Ensure sufficient ventilation.**

In order to start the auger monitoring mode, it has to be activated in the info centre. Please proceed as follows:

- Set ignition key to position I or II.
- Wait for the self test to run down.

Note

After the ignition has been switched on, the start screen "Road Driving or Field Operation" will appear on the display.

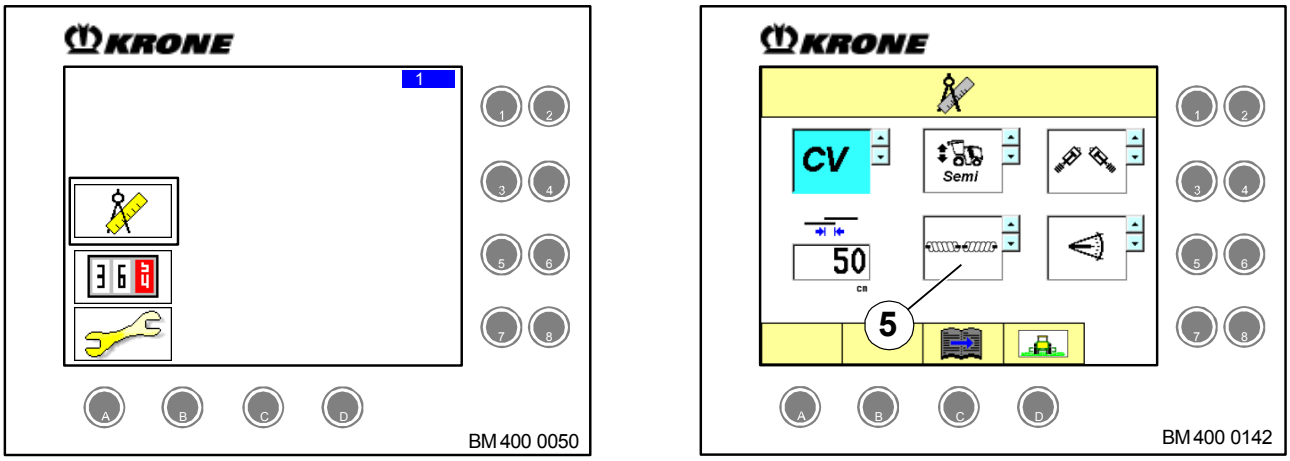


Fig. 259:

- You can bring up a menu level with the key on the rotary potentiometer.
- Select main menu 1 "Machine setting" with the rotary potentiometer.
- Press the rotary potentiometer.
- Select main menu 1-2 "Machine setting" with the rotary potentiometer.
- Press the rotary potentiometer.

The display shows menu level "Machine setting".

- Activating the D key brings up the basic screen.
- You can use the rotary potentiometer to select the desired setting. The selection box is highlighted in colour.
- Pressing the rotary potentiometer allows you to jump to the selection box.
- You can use the rotary potentiometer to set the desired value.
- Pressing the rotary potentiometer causes the setting to be applied and returns you from the selection box.
- Pressing the key on the rotary potentiometer takes you one menu level back.

5) Setting: Auger monitoring

Both augers on

Right auger on

Left auger on

Both augers on

12.2.7 Converting an Auger-Type Cross Conveyor to a "Tedder deflector plate unit"

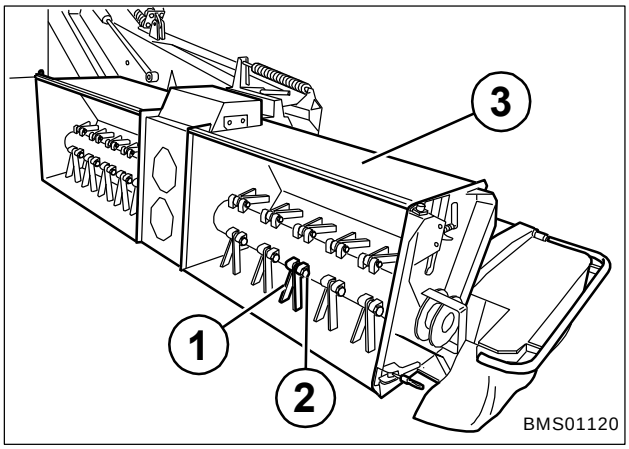
The conversion process is in the in reverse order.

Note

Stones are hurled up during operation

Effect: Danger to life or serious injuries.

- **After the auger-type cross conveyor has been removed, the tedder deflector plates must bereinstalled! (See chapter "Installing the Auger-Type Cross Conveyor".) (but in the opposite order) Otherwise license to operator becomes void**



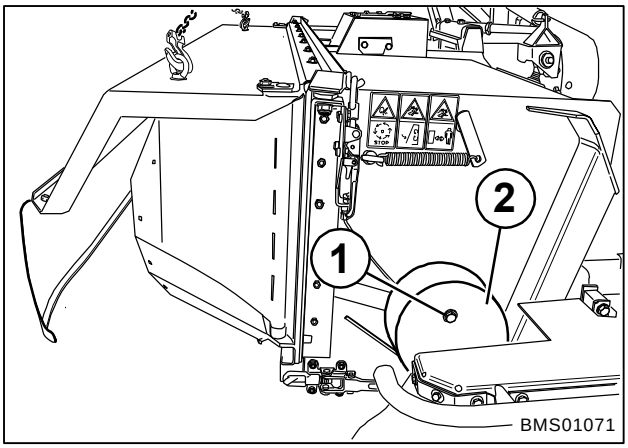


Fig. 260:

12.3 Additional Equipment – Mulching Device

Mulching devices can be used as additional equipment. For further information, please ask the mulching device dealer

Address:

Van Wamel BV

Energieweg 1

NL-6658 AE Beneden-Leeuwen

Note

Only attachment and detachment of mowing units is described below.

For information on operation, service, attaching, and detaching mulching devices, please consult the mulching device manufacturer.

12.4 Removing Mowing Units

Danger!

Drive elements may be placed in motion during conversion and installation work on the machine.

Effect: Danger to life or serious injuries

- **The cutting discs continue to run!**
- **Switch off the engine and remove the ignition key.**
- **Do not leave the driver's cab until the cutting discs/blade drums have come to a complete stop.**
- **Avoid skin contact with oil and grease.**
- **Seek medical help immediately should injuries caused by oil escaping under pressure occur.**
- **Secure the machine against accidental start-up and against rolling!**
- **After conversion and installation work is complete, mount all safety devices properly again.**
- **Only use appropriate and authorised lifting gear for installation and removal of the mowing units (weight approx. 1500 kg).**

12.4.1 Front mowing unit

The following conditions must be met in advance on the Big M 400:

- The front mowing unit is in transport position
- Switch off the engine, remove the ignition key, and secure the machine from rolling away.
- Move the "Travelling Gear" release switch to position I (off).
- Move release switch for "Road/field" to position II (field mode).
- Close the shut-off valve for the front outrigger.

Removing the Guard Cloth

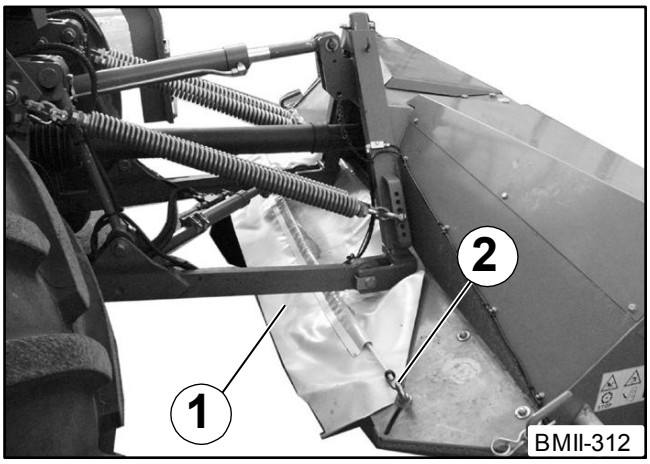


Fig. 261:

- Detach the guard cloth (1) with the expander band (2)

12.4.2 Removing of the compensation springs

Danger!

Setting on the compensation springs

Effect: Danger to life or serious injuries

- **The compensation springs must only be removed in transport position. In the working position the compensation springs are subject to high tensile stress.**
- **Severe injury can be caused if the compensation springs are removed while in the working position.**
- **The lower threaded blocks on the compensation springs must be fully screwed in.**

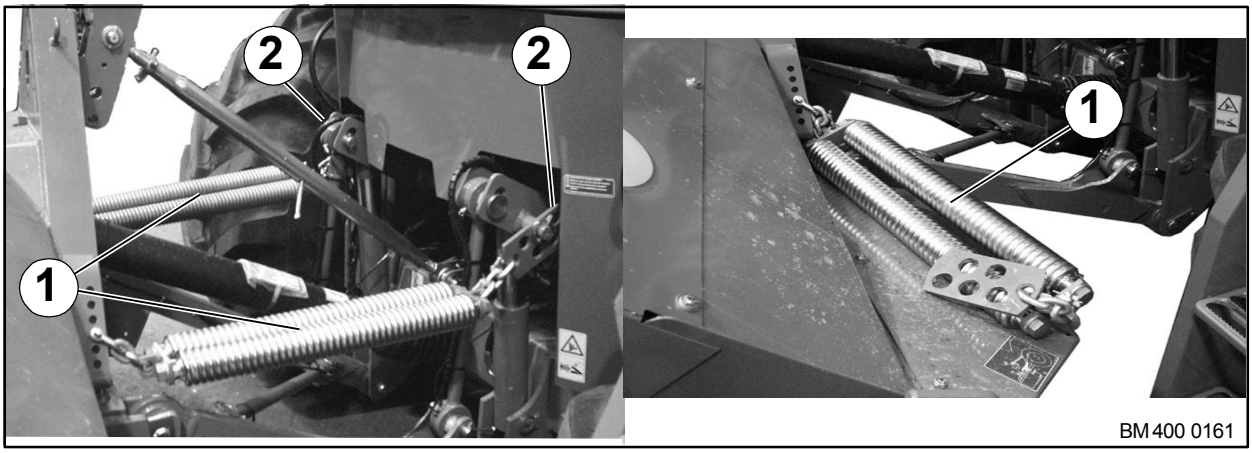


Fig. 262:

Note

Detach the compensation spring (1) in transport position.

To do this:

- Release the hinged cotter pin (2)
- Detach the compensation springs (1) and set down the front mowing unit

12.4.3 To remove the PTO shaft:

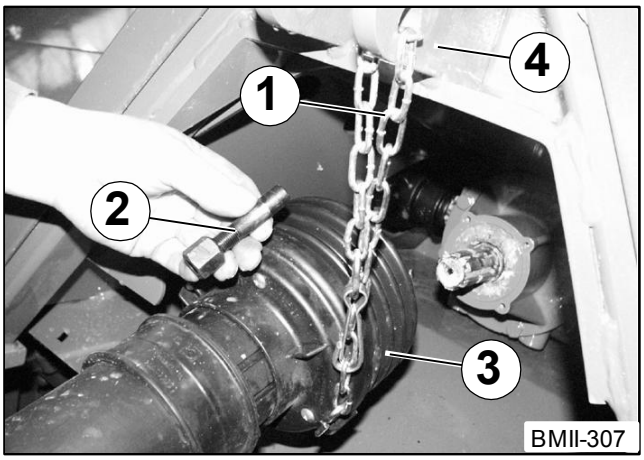


Fig. 263:

- Open the shut-off valve for the front outrigger.
- Lower the front mowing unit into working position
- Detach the support chain (1)
- Remove the screw (2) from the PTO shaft
- Pull the PTO shaft (3) off the front mower
- Connect the PTO shaft (3) with support chain (1) to the "Weiste" triangle (4).

With central lubrication option

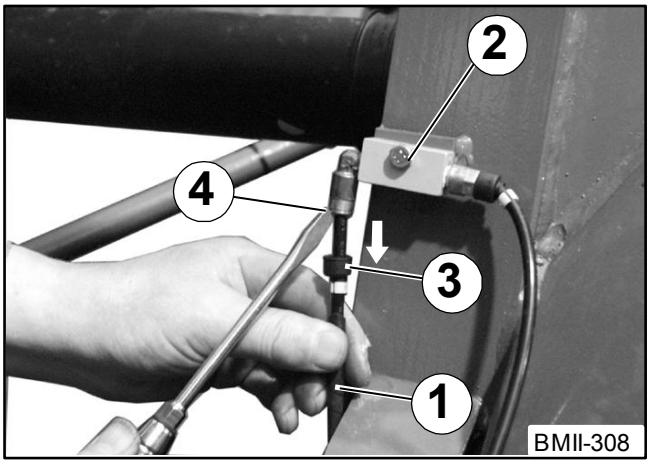


Fig. 264:

Disconnect the lubrication line (1) to the distributor (2).

To do this:

- Pull off the flap (3)
- Press in the lock (4) with a screwdriver and pull out the line (1).

Note

If the pressure on the lubrication lines is too high, loosen a lubrication point first to reduce the pressure. Do not close the line (1)! (Grease under high pressure)

12.4.4 Removing the Weiste Triangle

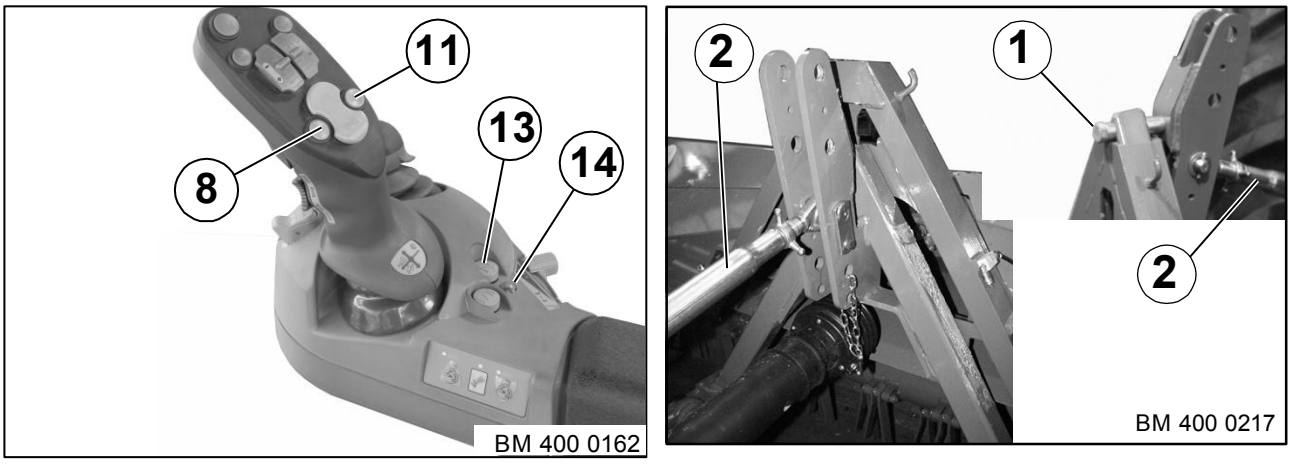


Fig. 265:

To continue with disassembly of the front mowing unit, semi-automatic mode must be activated.

To do this:

- Press the key (13) on the multi-function lever to activate semi-automatic mode (LED (14) lit).
- Raise the front lifting gear slightly with the (8) key on the multi-function lever.

This will relieve the locking bolts (1) on the Weiste triangle.

- Unscrew and remove the locking bolt (1).
- Adjust the top suspension arm (2) until it is free of tension.

Caution!

Do not lower the front mowing unit too far

Effect: Damages to the machine

In the following work step, make certain not to lower the front lifting gear too far. Doing so will damage the front mowing unit.

- You can use the (11) key on the multi-function lever to lower the front lifting gear until the front lifting gear is under the Weiste triangle.
- Press the (8) key on the multi-function lever briefly to stop the lowering process.

Caution!
The front lifting gear is raised in reverse travel.
Effect: Damages to the machine
The (Road/Field) release switch must be in "Road Travel" position

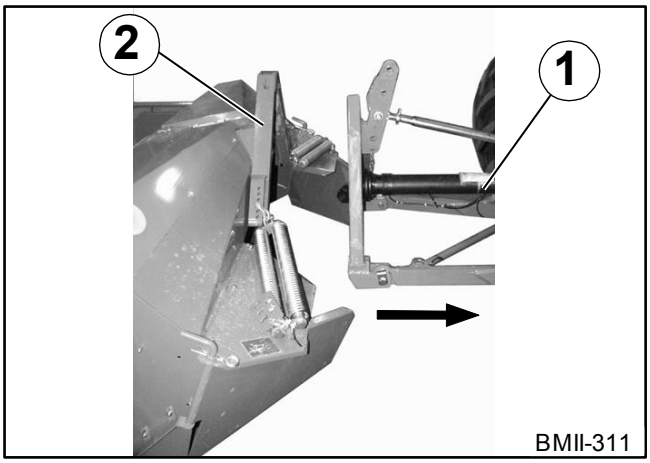


Fig. 266:

Switch the (Road/Field) release switch into "Road Travel" position.

Note

This prevents the front lifting gear from automatically being raised during reverse travel.

Moving the machine in reverse in Road mode

12.4.5 Attaching the Front Mowing Unit

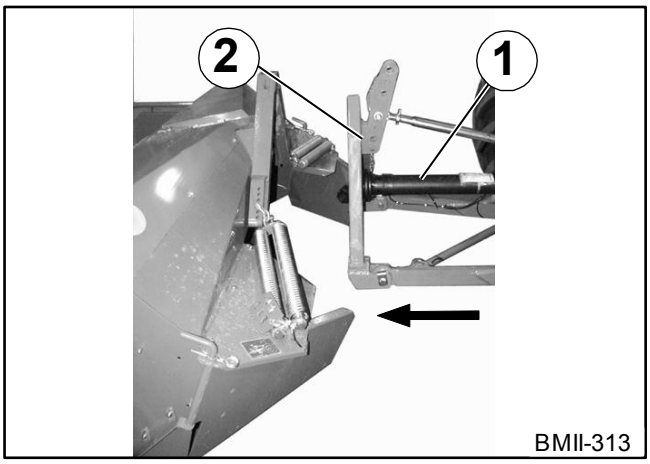


Fig. 267:

The front mowing unit is attached in the reverse order.

Note

The lifting gear must be raised in "Semi-automatic" mode

Connect the PTO shaft (1) high on the Weiste triangle (2) to avoid a collision with the front mower plate

12.4.6 Removing the Side Mowing Unit

Danger!

Drive elements may be placed in motion during conversion and installation work on the machine.

Effect: Danger to life or serious injuries

- **The cutting discs continue to run!**
- **Switch off the engine and remove the ignition key.**
- **Do not leave the driver's cab until the cutting discs/blade drums have come to a complete stop.**
- **Avoid skin contact with oil and grease.**
- **Seek medical help immediately should injuries caused by oil escaping under pressure occur.**
- **Secure the machine against accidental start-up and against rolling!**
- **After conversion and installation work is complete, mount all safety devices properly again.**
- **Only use appropriate and authorised lifting gear for installation and removal of the mowing units (weight approx. 1500 kg).**

Step 1:

The following conditions must be met in advance on the Big M 400:

Move the "Travelling Gear" release switch to position I (off).

- Move release switch for "Road/field" to position II (field mode).
- Move the hydraulic axle suspension to the mowing position (see Info Centre chapter entitled "Quick Access to Hydraulic Axle Suspension")

Step 2:

for standard equipment:

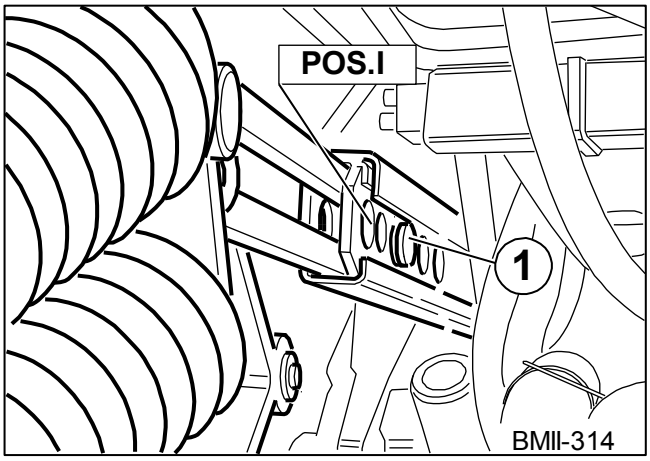


Fig. 268:

Set spring compensation to minimum.

To do this:

- Lift the lateral mowing units out through the headland position.
- Switch off the engine, remove the ignition key, and secure the machine from rolling away.
- Move the socket pin (1) to **pos. I** and secure it with a linch pin.
- Lower the lateral mowing units into working position.

Step 3:

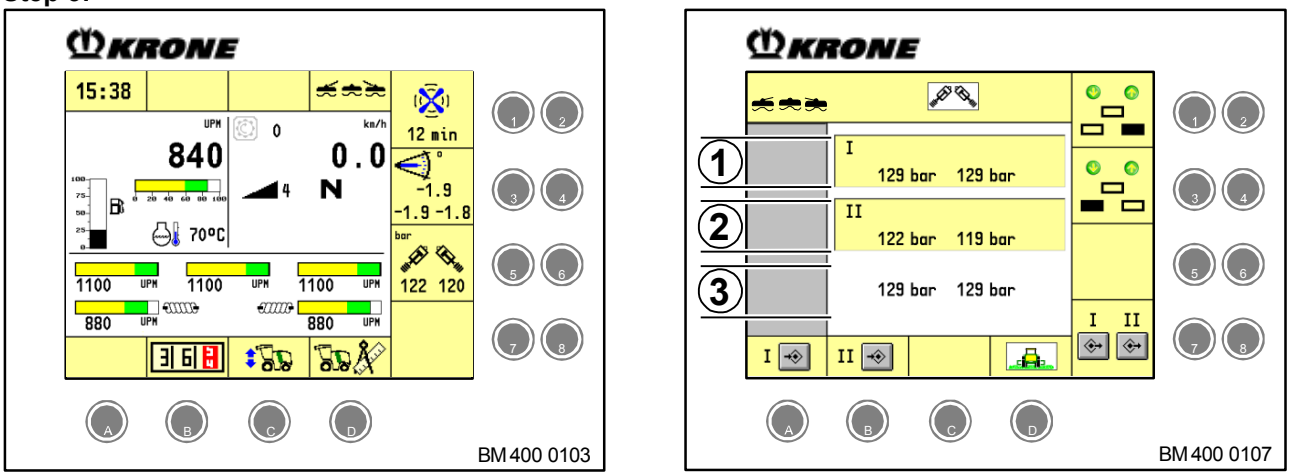


Fig. 269:

With hydraulic spring compensation design (optional):

- Lower the lateral mowing units into working position.
- Pressing the 5 or 6 key brings up hydraulically adjustable lateral spring compensation.
- Pressing the 1 keys and the 3 key reduces the pressure of the lateral mowing units to "zero bar".
- **Remove the ignition key and secure the vehicle and machine against rolling.**

Step 4:

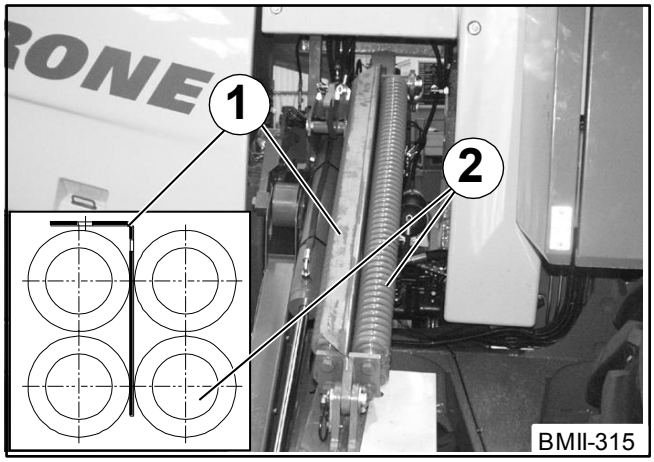


Fig. 270:

- Insert the clamping plate (1) (Item No. 233 505 0) from above into the right and left spring assemblies (2)

Note

Both clamping plates on the right and left sides are also required for dismantling just one mowing unit to make the outrigger arm free of tension.

Danger!

Setting on the compensation springs

Effect: Danger to life or serious injuries

- **The compensation springs must only be removed in transport position. In the working position the compensation springs are subject to high tensile stress.**
- **Severe injury can be caused if the compensation springs are removed while in the working position.**
- **The lower threaded blocks on the compensation springs must be fully screwed in.**

Step 5:

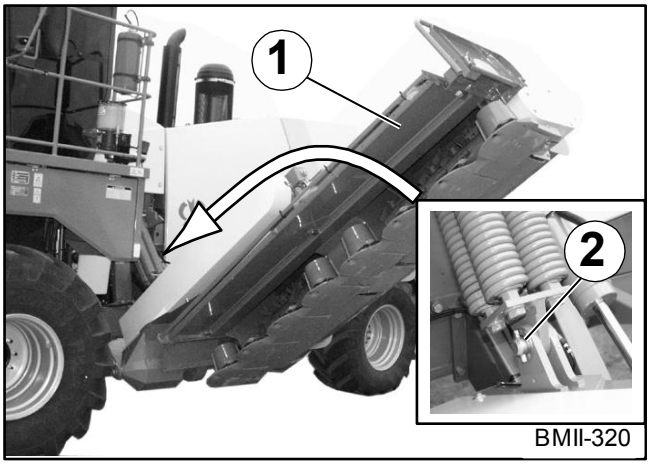


Fig. 271:

The spring assembly can be fitted to the outrigger arm instead of clamping plates.

To do this:

- Lift the lateral mowing unit (1) out through the headland position.
- Switch off the engine, remove the ignition key, and secure the machine from rolling away.
- Drive the clamping sleeve out of the attachment bolt (2) and remove the fastening bolt (2).
- Use a suitable and reliable tool to secure the spring assemblies.

Note

The weight of a spring assembly is about 100 kg.

Danger!

Remove the ignition key and secure the vehicle and machine against rolling.

Only use appropriate and authorised lifting equipment for the installation and removal of the mowing units (total weight of mowing unit = approx. 1500 kg).

Step 6:

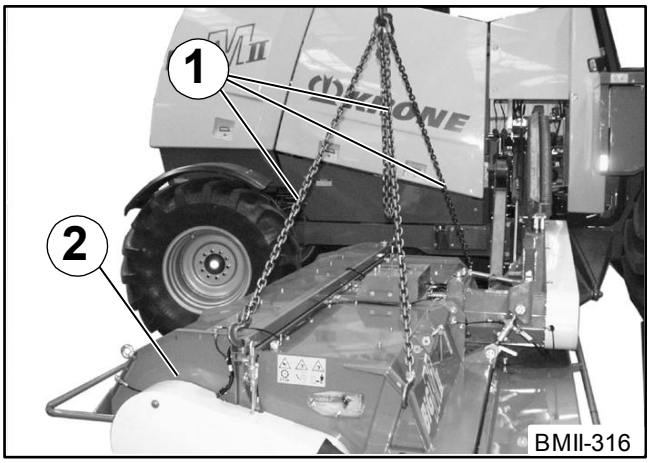


Fig. 272:

The mowing unit must be in the working position to be removed.

- Move the opposite mower unit into headland position and support it there.
- Connect the retaining chains (1) on the mowing unit (2).

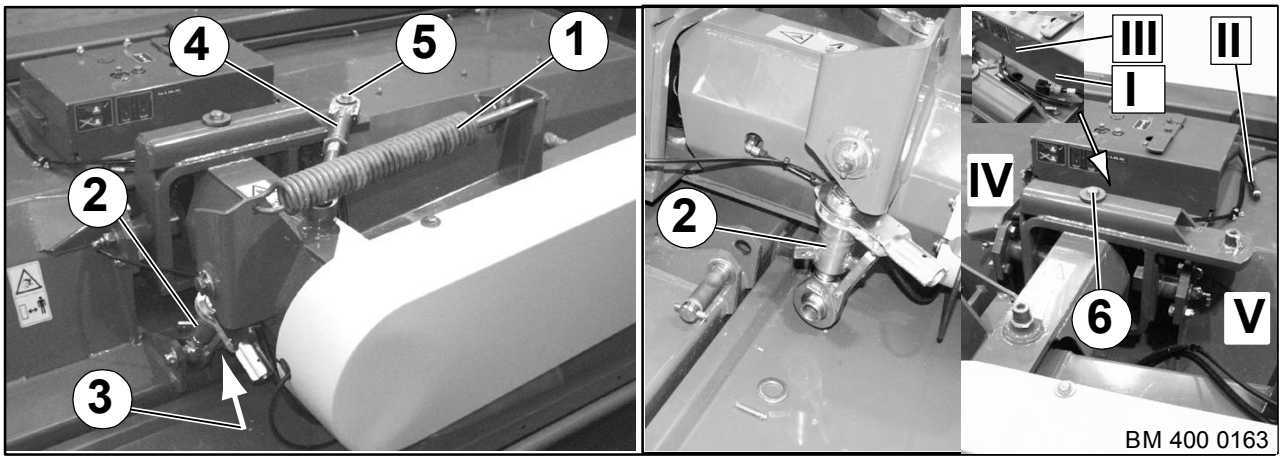


Fig. 273:

- Remove the spring (1) on the right outrigger arm.
- Detach the top suspension arm (2) for cutting height on the mowing unit. To do this, drive the clamping sleeve out of the attachment bolt (3) and remove the attachment bolt and washer.
- Remove the cable plug (I) for mower speed.
- If the BSS option is installed, disconnect the electrical line for speed monitoring on the plug connection (II).
- With the central lubrication option, remove the line to the distributor (III) and the two lines to the bearing bolts (IV and V).
- Expose all lines (lubrication lines and electrical lines) up to the universal joint mount. Cut the relevant cable ties to do this.
- Remove the top suspension arm (4) for mower cross position. To do this, unscrew the attachment bolts (5) and press the top suspension arm (4) off the bolts.
- Remove the attachment bolt (6) on the universal joint bracket. Remove the universal joint mount.

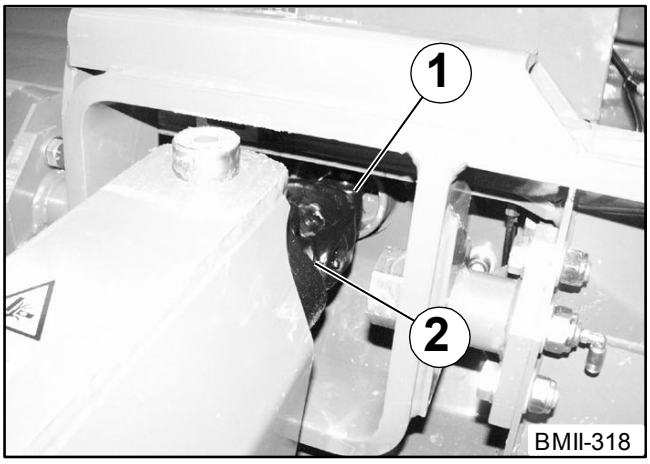


Fig. 274:

- Align the double joint (2). To do this, turn the mowing unit manually on the outer blade drum until the attachment bolt (1) of the double joint is positioned vertically.
- Raise the mowing unit slightly with lifting equipment until the bolts of the universal joint mount have come out of the universal joint bracket.
- Move the mowing unit back to guide the double joint down from the shaft.
- Move the mowing unit away from the machine with lifting equipment and set it down securely.

Caution!

Lift the outrigger arms higher than the headland position.

Effect: Damages to the machine

- **Never raise the outrigger arms higher than the headland position.**

12.4.7 Attaching the Lateral Mowing Unit

Danger!

Drive elements may be placed in motion during conversion and installation work on the machine.

Effect: Danger to life or serious injuries

- **The cutting discs continue to run!**
- **Switch off the engine and remove the ignition key.**
- **Do not leave the driver's cab until the cutting discs/blade drums have come to a complete stop.**
- **Avoid skin contact with oil and grease.**
- **Seek medical help immediately should injuries caused by oil escaping under pressure occur.**
- **Secure the machine against accidental start-up and against rolling!**
- **After conversion and installation work is complete, mount all safety devices properly again.**
- **Only use appropriate and authorised lifting gear for installation and removal of the mowing units (weight approx. 1500 kg).**

Step 1:

The following conditions must be met in advance on the Big M 400:

Move the "Travelling Gear" release switch to position I (off).

- Move release switch for "Road/field" to position II (field mode).
- Move the hydraulic axle suspension to the mowing position (see Info Centre chapter entitled "Quick Access to Hydraulic Axle Suspension")

Danger!

Remove the ignition key and secure the vehicle and machine against rolling.

Only use appropriate and authorised lifting equipment for the installation and removal of the mowing units (total weight of mowing unit = approx. 1500 kg).

Step2:

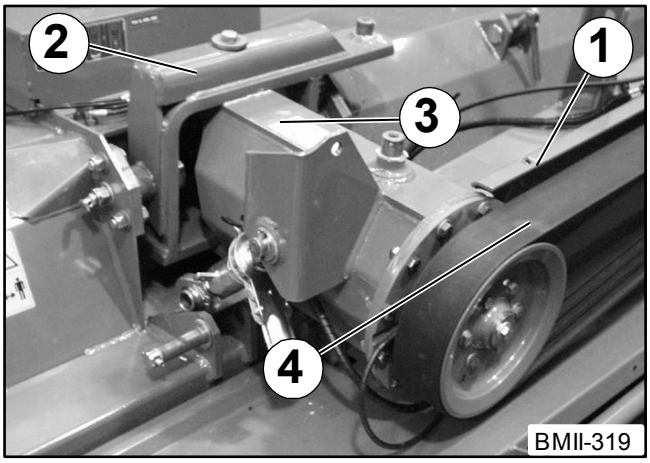


Fig. 275:

- Remove the belt guard (1) on the outrigger arm
- Connect the mowing unit to the retaining chains and guide up to the outrigger arm
- Align the universal joint bracket (2) of the mowing unit to the universal joint mount (3) of the outrigger arm.

Step 3:

Caution!

Attaching the double joint

Effect: Elevated danger of crushing hands

- **Make certain when guiding in the double joint that the lifting equipment is not adjusted or moved. Only the technician is permitted to move the mowing unit manually on the front guard tube.**

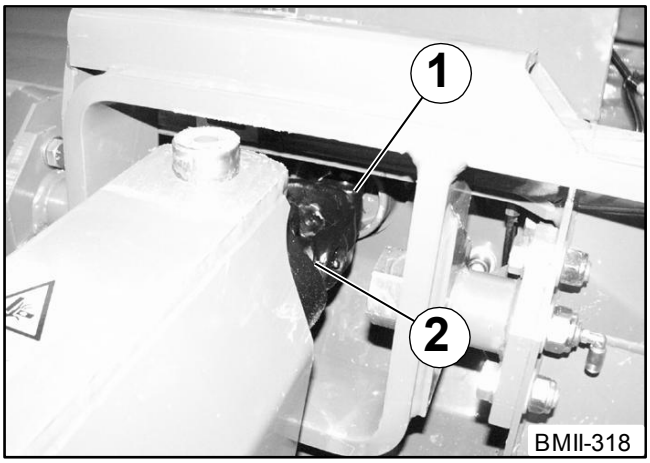


Fig. 276:

- Align the double joint (2) until the attachment bolts (1) of the double joint are positioned vertically.
- Guide the double joint onto the drive PTO shaft

Note

To make it possible to lock in the profile toothing, the drive shaft can be turned by moving the power belt (4) on the outrigger arm.

- Installation of the Belt Guard on the Outrigger Arm

12.4.8 The remainder of the installation is in reverse order to the removal procedure.

Caution!

Clamping plates not removed. (When using clamping plates)

Effect: Damages to the machine

- **After attaching the mowing units, make certain the clamping plates have been removed**

After the mowing unit has been attached, lower the mowing unit down to the ground and remove the two clamping plates on the right and left side.

13 Maintenance - Engine

Danger!

Unexpected actions on the machine

Effect: Danger to life, injuries or damage to the machine.

- **Always make certain that the drive and the engine are switched off before doing any repairs, maintenance or cleaning. Remove the ignition key!**
- **When working on the engine, always switch off the main battery switch!**
- **Store lubricants and fuels in suitable containers and make certain they are disposed of properly.**
- **Exercise caution when draining hot oil or fluid - danger of burns!**

Cooling water and air intake hoses

Check the condition and fastening of cooling water and air intake hoses every 50 operating hours. Replace cooling water hoses and non-metallic parts on the air intake system every 2 years.

Check the engine, water cooler and exhaust system daily to ensure it is clean. Clean it if necessary.

Coolant

The engine cooling system is filled with a mixture of corrosion protection fluid and antifreeze in the factory. The coolant consists of 50 % anti-corrosion antifreeze and 50 % water.

Protection against freezing is ensured to approximately -37° C. See also the engine manufacturer's specifications.

Belts

All belts must be kept continuously under the proper tension.

For new belts, check the tension after the first 2 to 3 operating hours. If necessary, retighten.

Cleanliness

To protect against the danger of fire, clean the engine area and especially the exhaust system as well as the areas surrounding the brakes and gearbox, etc.

If the crop is very dry and there is a lot of dust, check the spots listed above more frequently for accumulations of dirt and clean if necessary.

13.1 Maintenance Table – Engine

	Maintenance work	Maintenance interval								
		Once after 10 hours	Before the beginning of the season	Every 10 hours but at least 1x daily	Every 50 hours	Every 100 hours	Every 200 hours but at least 1x annually	Every 500 hours but at least 1x annually	After every third season	As required
	Engine									
1	Clean the engine compartment, radiator and radiator screen			X						
2	Engine - oil level check		X	X						
3	Engine oil change						X			
4	Replacing the engine oil filter						X			
5	Ribbed V-belt						X			
6	Inspection of seal and general condition						X			
7	Check valve play, adjust as needed						X			
	Fuel System									
1	Replacing the Fuel Filter							X		
2	Fuel filter insert							X		
3	Fuel level			X						
4	Add fuel									X
5	Venting the fuel system									X
	Cooling system									
1	Engine coolant - checks and controls			X						
2	Change engine coolant									X
3	Air filter – main cartridge							X		
4	Air filter – safety cartridge								X	
5	Check the anti-freeze in the cooling system; top up with anti-freeze, if and when necessary.						X			
	Check hose connections									
1	Check hoses and hose clamps of the air suction and cooling system for tight fit.						X			
2	Check the fuel injection pipe for loose connections.						X			
3	Check the turbo charger screw connections and hose connections for tight fit.						X			
	Have the starter checked.		X							
1	Have the three-phase generator checked.		X							

13.2 Contamination in the engine compartment

Caution!
Contamination in the engine compartment
Effect: Danger of fire

- **The build-up of dust, oil and grass inside the engine compartment is combustible and presents an increased fire hazard.**
- **Keep the engine and the engine compartment clean at all times.**

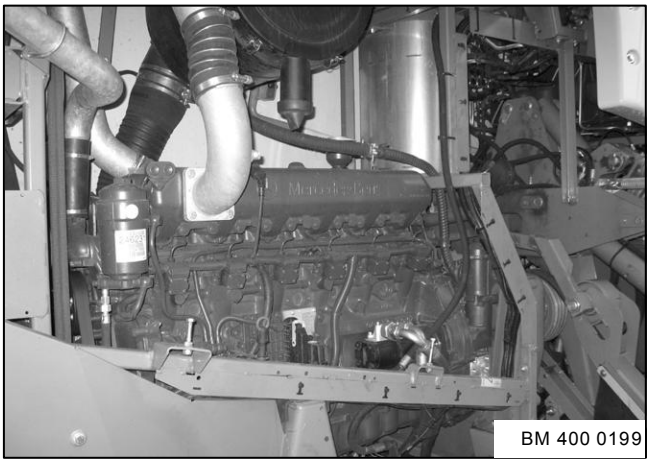


Fig. 277:

13.3 Cleaning the Engine Compartment with Compressed Air

Warning!
Cleaning with compressed air
Effect: Loss of eyesight!

- **Keep people well away from the working area.**
- **Wear suitable work clothes to perform cleaning jobs with compressed air (for example eye protection).**

When necessary, blow away the dirt and contamination and wipe off oil deposits.

13.4 Engine oil level

Caution!

The oil level is too low.

Effect: Engine damage

- **It is absolutely essential for the life of the engine that you observe this oil level.**
- **Check the oil level when the machine in at a horizontal position.**
- **Do not start the engine if the level is below the bottom mark of the oil dipstick.**

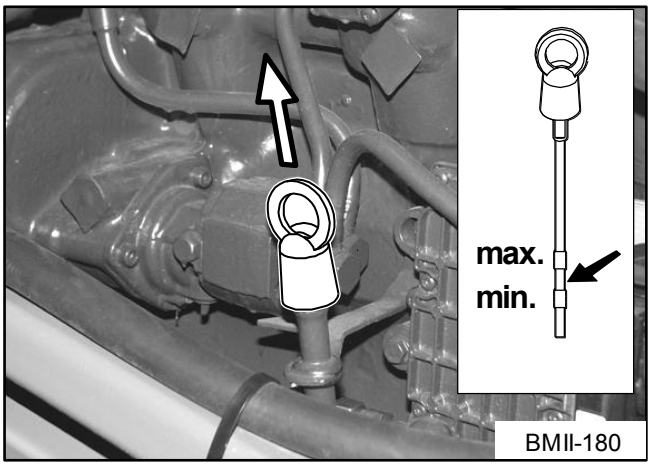


Fig. 278:

- Before pulling out the oil dip stick, its environment must be thoroughly wiped clean.
- The oil level must be between the min. and max. marks.
- After the oil level has been checked, reinsert the oil dipstick.

13.4.1 Engine oil and filter replacement

Note

For further information please refer to the engine manufacturer's operating instruction included with delivery (chapter on Engine oil and Filter replacement)

13.5 Fuel filter/water separator

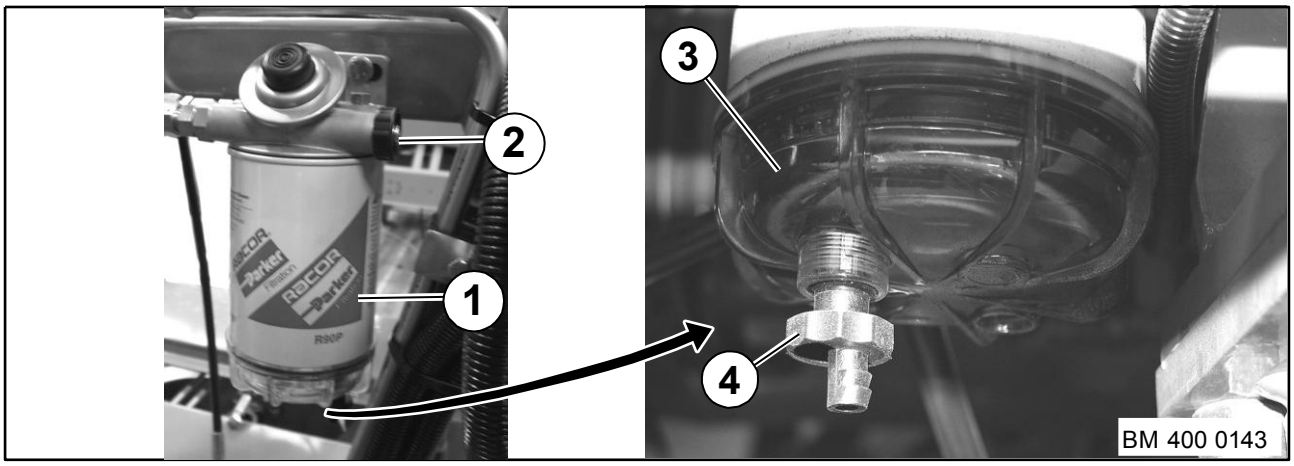


Fig. 279:

The fuel prefilter cleans fuel. The fuel supply valve (2) can be used to interrupt the fuel supply from the tank to the engine, e.g. for maintenance and repairs of the fuel system and for replacing the fuel prefilter.

13.5.1 Replacing the fuel filter

- Close the fuel supply valve (2) (turn to the right).
- Unscrew the filter pan (1).
- Clean the filter pan and filter insert, if there is a heavy accumulation of dirt or damage, replace the filter insert.
- Check the seal ring for the filter pan and replace it if necessary.
- Wet the seal ring with diesel fuel and set it in place.
- Place the filter insert in the filter pan and screw the filter pan (1) on the filter housing.
- Open the fuel supply valve (2) (turn to the left).

13.5.2 Empty the water separator

- The water that is present in the fuel is collected in the inspection glass (3).
- Drain the collected water by loosening the drain screw (4) and capture it in a container.

13.6 Replacing the fuel filter element

Warning!

Rupture in fuel return line

Effect: Danger of fire

After completing maintenance and repairs or replacing the fuel filter, the three-way cock must be turned back to operating position, because otherwise, if the return line is closed and the engine is running, pressure will build up in this line which can cause the line to burst. This results in a fire hazard inside the engine compartment.

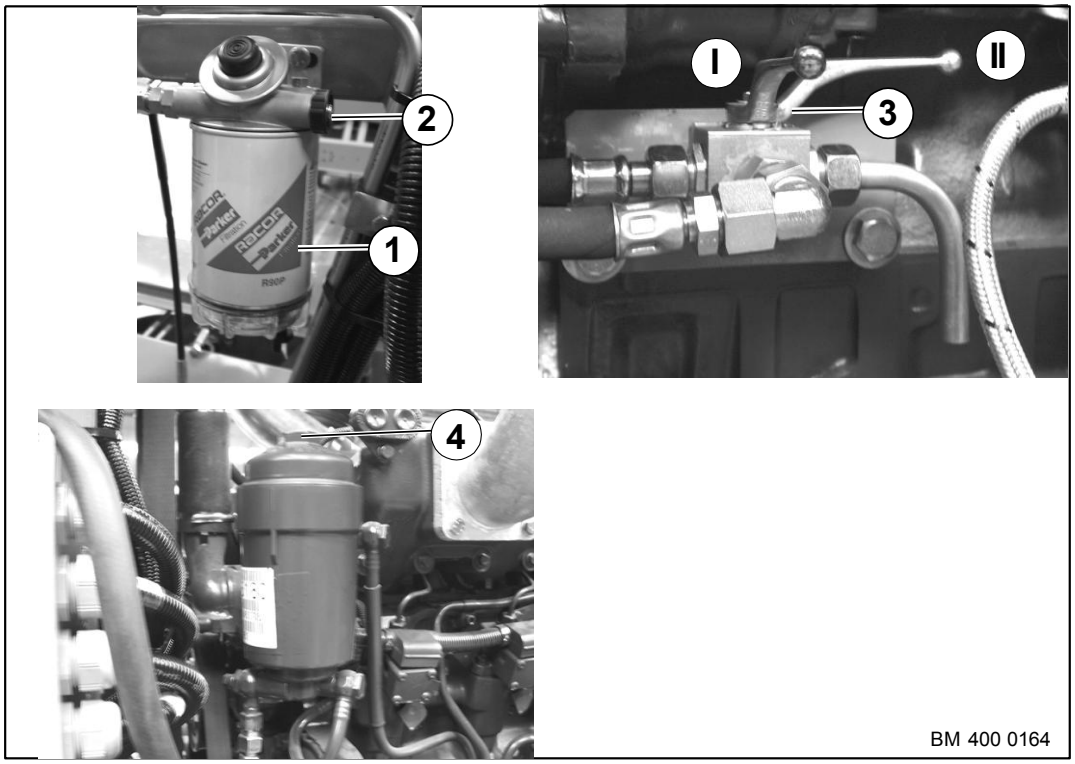


Fig. 280:

- Close the fuel return valve (2) at the fuel prefilter (1).
- Set the three-way valve (3) (right engine side in direction of travel) to pos. II, so that the fuel runs out of the filter housing. Collect the fuel in a suitable vessel.
- Unscrew the screw cap (4) with the filter element.
- Replace the filter element and the sealing ring.
- Screw in and tighten the screw cap (4) with filter element. Torque 25 Nm
- Set three-way cock (3) to pos. I, so that the return line is closed (as in initial position).
- Open the fuel return valve (2) at the fuel prefilter.

Note

For further information please refer to the engine manufacturer's operating instruction included with delivery (chapter on replacing the fuel filter insert)

13.7 Fuel

Warning!

Danger of explosion!

- **Never fill tank while the engine is running.**
- **No smoking!**

Handle fuel carefully. It is readily flammable. Do not smoke when adding fuel to the machine and make certain there are no open flames or sources of sparks in the vicinity.

Fuel must only be added outdoors. Prevent fires by keeping the machine free of dirt and grease residue. Always dispose of spilled fuel.

Quality and purity of fuel are very important for consistent performance and a long engine service life.

For temperatures under 10°C (50°F), always use winter fuel.

Note

For further information please refer to:

- **Engine manufacturer's operating instructions, included with delivery (chapter on fuels)**
- **The engine manufacturer's fuel specification, included with delivery**

13.8 Tanks

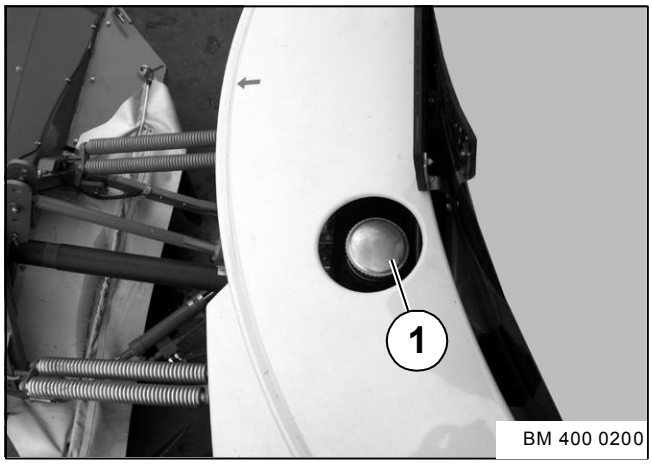


Fig. 281:

- Switch off the engine, remove the ignition key, and secure the machine from rolling away.
- Clean grass and dust from the area around the filler neck (1).
- Open the tank cover.
- Fill the fuel tank. (Use only clean fuel in the tank. If necessary, filter the fuel before adding it to the tank.)
- Monitor tank filling on the fuel gauge in the Info Centre display.
- Seal the tank cover tightly.
- Dispose of spilled fuel.

Note

Fill the fuel tank daily after finishing operation to prevent condensation water from forming and freezing in cold weather.

- Capacity: about 700 litres

13.9 Venting the fuel system

Note

For further information please refer to :

- **Engine manufacturer's operating instructions, included with delivery (chapter on venting the fuel system).**

The fuel system must be vented if necessary after a lengthy standstill.

13.10 Engine coolant

When the machine is first delivered the cooling system is filled with a special coolant. This coolant protects against corrosion and provides frost protection up to –37° C

Note

The cooling system must be always filled with engine coolant, no matter what the season. Change the engine coolant every 3 years.

If no coolant is available, then depending on the season, you should use a mixture of 50 % ethylene glycol antifreeze/anticorrosion agent and 50 % clear, soft water. This mixture also provides corrosion protection and protection against freezing to –37° C. For further information, please refer to:

The engine manufacturer's fuel specification, included with delivery (sheet 325.2)

Required quantity = 44 litres

Warning!

Cooling system density additives may not be used.

13.11 Engine coolant - checks and controls

Warning!

Hot cover

Effect: Hand burns

- **Never open the radiator cap while the engine is hot. Switch off the engine and wait until the engine has cooled down**

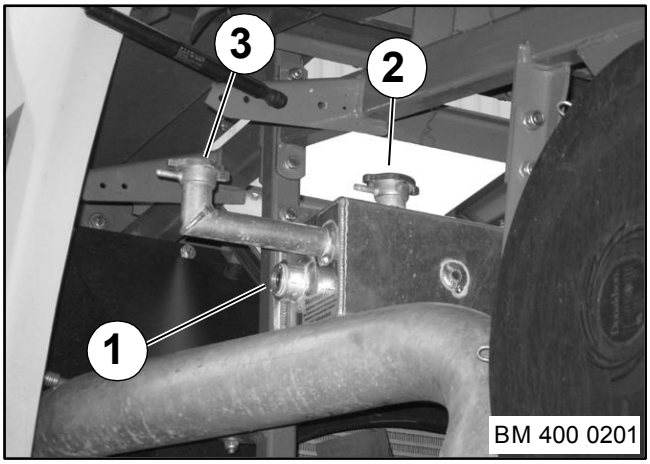


Fig. 282:

Check:

- Check the level of engine coolant every day.
- The engine coolant level must be visible up to the middle of the inspection window.
- If necessary, top up the engine coolant

Fill:

- Turn the cap (2) to the first notch and wait until the overpressure reduces.
- Fully open the cap (3) and top up the engine coolant to the middle of the inspection window.
- Close caps (2) and (3).

Draining off coolant:

The drain screw (2) for coolant is located on the cooling water pipe in the back of the engine compartment.

13.12 Air filter

Perform air filter maintenance regularly, but at least when the error message for a dirty air filter appears in the Info Centre Display.

Cleaning the Air Filter

- Unscrew the nut (2) and remove the cover (1).
- Unscrew the nut (4) and carefully remove the filter insert (3).
- Clean the interior area and the seal surfaces of the filter housing.
- Blow out the filter insert with compressed air (max. 5 bar) from the inside to the outside.
- Replace filter inserts that are excessively dirty or damaged. Filter inserts that were installed more than 4 years ago must also be replaced.
- Install the filter insert again.
- Mount the cover (1).
- Close the air filter intake sieve.

13.12.1 Safety cartridge

14 Maintenance – Mowing Units

14.1 Special Safety Instructions

Danger!

Unexpected actions on the machine

Effect: Danger to life, injuries or damage to the machine.

- **Always make certain that the drive and the engine are switched off before doing any repairs, maintenance or cleaning.**
- **The cutting discs continue to run!**
- **Switch off the engine and remove the ignition key.**
- **Secure the machine against accidental start-up and against rolling!**

Danger!

When checking the cutter blades and retaining bolts only sporadically

Effect: Danger to life, injuries or damage to the machine.

- **Always check the mowing units for damaged, missing or worn blades, retaining bolts, leaf springs and cutting discs/blade drum before starting operation; replace any parts that are damaged, missing or worn!**
- **Always replace missing and damaged blades in sets to prevent unbalanced rotation!**
- **Never mount unevenly worn blades on a drum/disc!**
- **Whenever a blade is changed, also inspect the fasteners and replace them, if necessary!**

14.1.1 Test run

Danger!

Testing the machine after repair, maintenance or cleaning work and after technical intervention.

Effect: Danger to life or serious injuries

- **The mowing unit must be in working position**
- **Do not switch on the drives until the mowing units are resting on the ground and you are absolutely sure that neither persons, animals nor objects are in the danger zone.**
- **Start a trial run of the machine only from the driver's seat.**

14.2 Spare Parts

Danger!

Using non-approved spare parts.

Effect: Danger to life, serious injuries or loss of warranty claims as well as exclusion of liability

- **Use only authentic KRONE spare parts and accessories authorised by the manufacturer. The use of spare parts, accessories or additional equipment not manufactured, tested or approved by KRONE will exclude any liability for consequential damage.**

14.3 Maintenance Table – Mowing Units

	Maintenance work	Maintenance interval								
		Once after 10 hours	Before the beginning of the season	Every 10 hours but at least 1x daily	First time after 50 hours	Every 100 hours	Every 200 hours but at least 1x annually	Every 500 hours but at least 1x annually	After every third season	As required
1	**Main gearbox – CV lateral mowing units**									
	Oil level check		**X**	**X**						
	Oil change		**X**		**X**		**X**			
2	**Angular gearbox for front mower CV+CRi**									
	Oil level check		**X**	**X**						
	Oil change		**X**		**X**		**X**			
3	**Input gearbox for front mower CV+CRi**									
	Oil level check		**X**	**X**						
	Oil change		**X**		**X**		**X**			
4	**Front mower speed gearbox (CV)**									
	Oil level check		**X**	**X**						
	Oil change		**X**		**X**		**X**			
5	**Angular gearbox for front mower CR**									
	Oil level check		**X**	**X**						
	Oil change		**X**		**X**		**X**			
6	**Gearbox for top roller drive CRi (optional)**									
	Oil level check		**X**	**X**						
	Oil change		**X**		**X**		**X**			
7	**Front mower cutter bar CV + CRi**									
	Oil level check		**X**	**X**						
	Oil change		**X**		**X**		**X**			
8	**Cutter bar for lateral mowing units**									
	Oil level check		**X**	**X**						
	Oil change		**X**		**X**		**X**			
9	**Cutter blades**									
	Check		**X**	**X**						
	screw									**X**
10	**Mowing discs / mower drum**									
	Check		**X**	**X**						
	Screw									**X**
11	**Rotary hub**									
	Check		**X**	**X**						
	Screw									**X**
12	**Conditioner belt drive**									
	Clean									
	Screw									**X**
13	**V-shaped tines and retaining bolts**									
	Check		**X**	**X**						
	Screw									**X**

14.4 Tool box

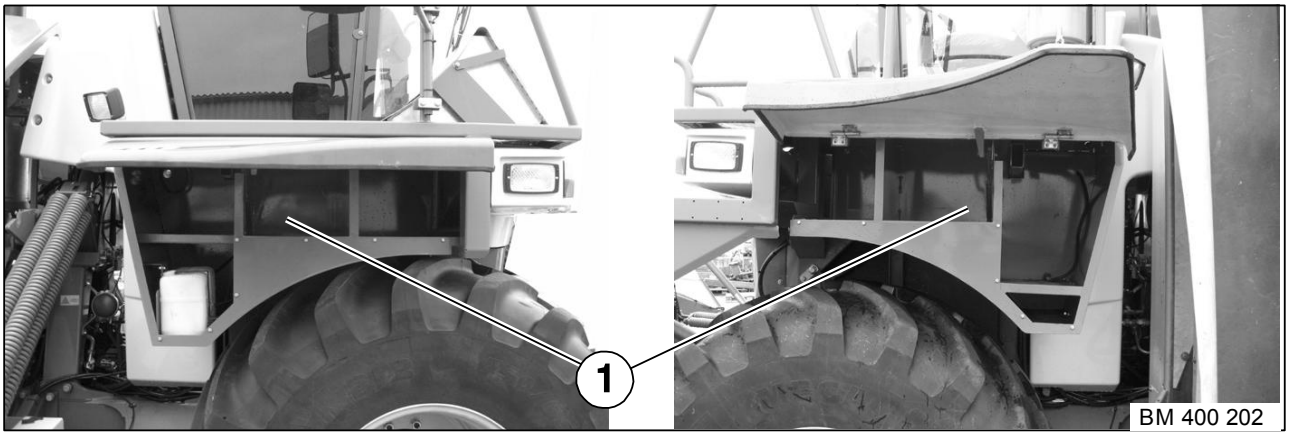


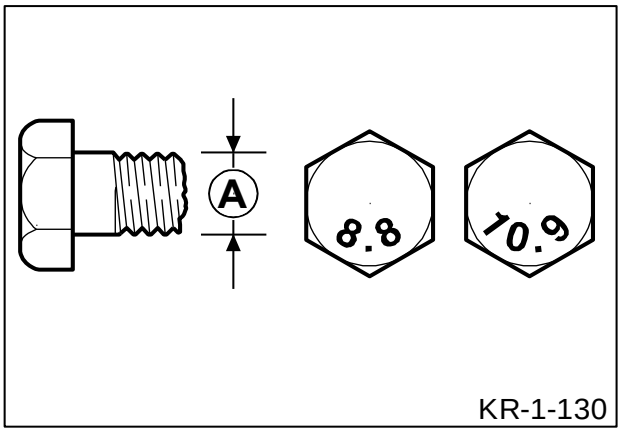
Fig. 283:

14.5 Torques

Torque M_A is stated in Nm (unless otherwise indicated).

A Ø	5.6	6.8	8.8	10.9	12.9
	MA (Nm)				
M 4		2,2	3	4,4	5,1
M 5		4,5	5,9	8,7	10
M 6		7,6	10	15	18
M 8		18	25	36	43
M 10	29	37	49	72	84
M12	42	64	85	125	145
M14		100	135	200	235
M14x1.5			145	215	255
M 16		160	210	310	365
M16x1.5			225	330	390
M 20			425	610	710
M 24			730	1050	1220
M 24x1.5	350				
M 24x2			800	1150	1350
M 27			1100	1550	1800
M 27x2			1150	1650	1950
M30			1450	2100	2450

A = Thread size
(The stability class can be seen on the head of the screw.)



14.5.1 Deviating Torque

Screws / nuts	MA [Nm]
Nut for shear protection (rotary hub)	300
Bearing housing for cutting disc	42
Bearing housing for blade drum	42

Note

Regularly check that nuts and bolts are tightly in place (approx. every 50 hours) and tighten them if necessary.

14.6 Filling Quantities and Lubrication Designations for Gearboxes

	Tank Capacity [litres]	Filtered oils Brand name	Bio-degradable lubricants Brand name
Main gearbox side mower	2 x L 1.7	SAE90	**On request**
Angular gearbox/front mower	L 1.7	SAE90	
Input gearbox/front mower (CV/CRI)	L 0.7	SAE90	
Speed gearbox/front mower (CV)	L 1.7	SAE90	
Angular gearbox/front mower (CRI)	0,9 l	SAE90	
Gearbox for Top Roller Drive (optional)	0,3 l	SAE90	
Cutter bar/front mower (CV/CRI)	7,0 l	SAE90	
Cutter bar/side mower	2 x 8,0 l	SAE90	

14.6.1 Oil Level Check and Oil Change Intervals (Gearboxes)

Note

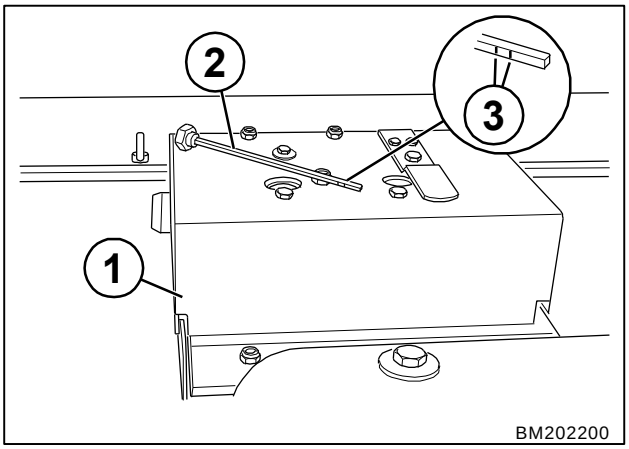
Oil level check and oil change (gearboxes) and lubricating the machine

Effect: Long expected service life of machine

- **First oil change on all gearboxes after 50 operating hours, then every 200 operating hours (but at least once a year).**
- **Before using the machine always check the oil level.**
- **With bio-degradable oils the changing intervals must be complied with absolutely because of ageing of the oils.**

14.7 Main gearbox

14.7.1 Lateral Mowing Unit



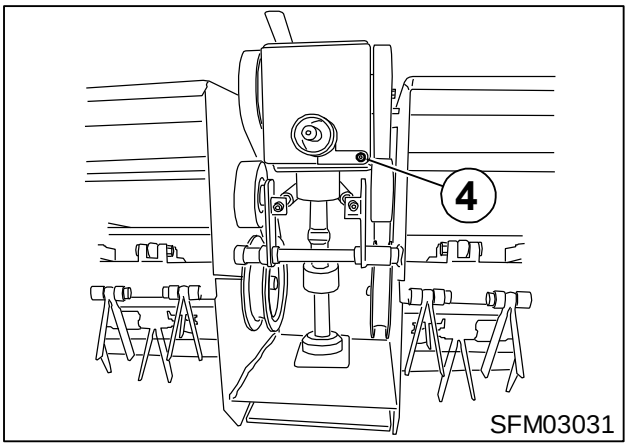


Fig. 284:

Oil level check:

- Screw the measuring rod (2) out of the main gearbox (1).
- Clean the measuring rod (2) with absorbent paper or cloth.
- Screw the measuring rod (2) completely back into the main gearbox (1).
- Screw the measuring rod (2) back out of the main gearbox (1).
- Check the oil level and check for abrasion. The oil level must be between the marks (3). If necessary, add more oil (SAE 90) through the measuring rod opening.
- Screw the measuring rod (2) back into the main gearbox (1).

Changing the oil:

- Unscrew the measuring rod (2).
- Unscrew the oil drain plug (4).
- Collect the used oil in a suitable drip pan.
- Fit the oil screw plug with a new seal.
- Top up the oil from above (the dip stick hole); screw the dip stick (2) back in.

Oil quality / oil quantity: see Chapter "Filling Quantities and Lubricant Designations for Gearboxes"

Note

The used oil must be disposed of correctly

14.8 Angular gearbox

14.8.1 Front Mowing Unit (CV+CRI)

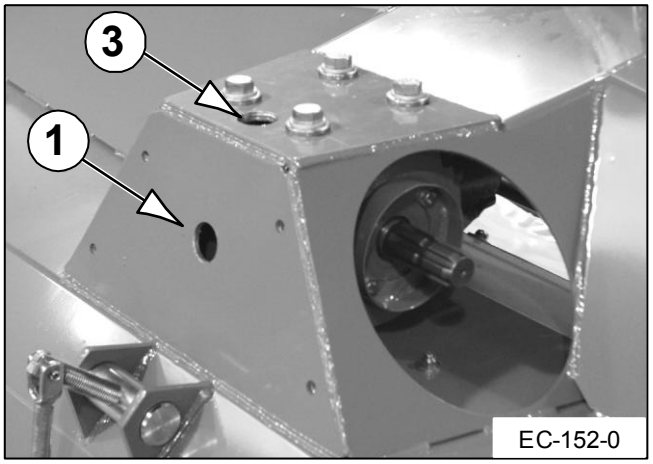


Fig. 285:

Oil level check:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Unscrew the inspection screw (1)
- Oil level up to bore hole (1)
- If necessary, top up the oil (SAE 90)
- Screw the check screw (1) back in.

Oil change:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Unscrew venting filter (3) and extract the oil
- Collect the used oil in a suitable drip pan
- Top up oil from above (oil level up to bore hole (1)).
- Screw in the ventilation filter (3).

Oil quality / oil quantity: see Chapter "Filling Quantities and Lubricant Designations for Gearboxes"

Note

The used oil must be disposed of correctly

14.9 Input gearbox

14.9.1 Front Mowing Unit (CV+CRI)

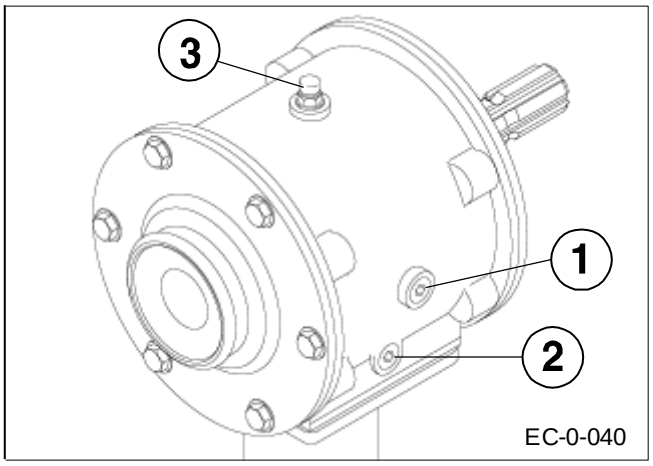


Fig. 286:

Oil level check:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Unscrew the inspection screw (1)
- Oil level up to bore hole (1)
- If necessary, top up the oil (SAE 90)
- Screw the check screw (1) back in.

Oil change:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Screw out the screw plug (2).
- Collect the used oil in a suitable drip pan
- Screw in the screw plug (2)
- Fill oil (3) (oil level up to hole (1))
- Screw the inspection screw (1) and ventilation filter (3) back in.

Oil quality / oil quantity: see Chapter "Filling Quantities and Lubricant Designations for Gearboxes"

Note

The used oil must be disposed of correctly

14.10 Speed gearbox

14.10.1 Front mowing unit (CV)

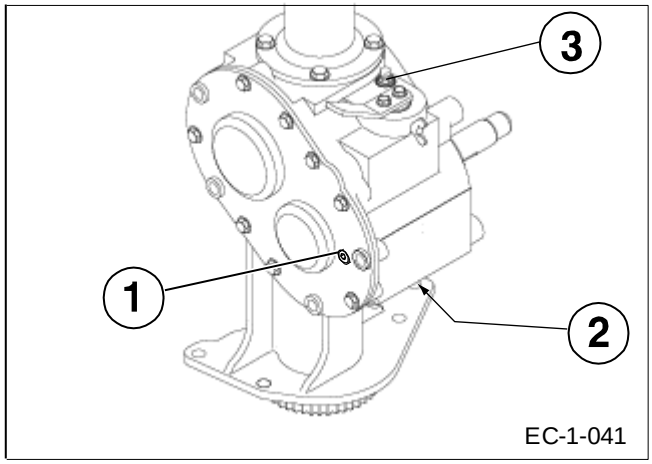


Fig. 287:

Oil level check:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Unscrew the inspection screw (1)
- Oil level up to bore hole (1)
- If necessary, top up the oil (SAE 90)
- Screw the check screw (1) back in.

Oil change:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Screw out the screw plug (2).
- Collect the used oil in a suitable drip pan
- Screw in the screw plug (2)
- Fill oil (3) (oil level up to hole (1))
- Screw the inspection screw (1) and ventilation filter (3) back in.

Oil quality / oil quantity: see Chapter "Filling Quantities and Lubricant Designations for Gearboxes"

Note

The used oil must be disposed of correctly

14.11 Angular gearbox

14.11.1 CRI

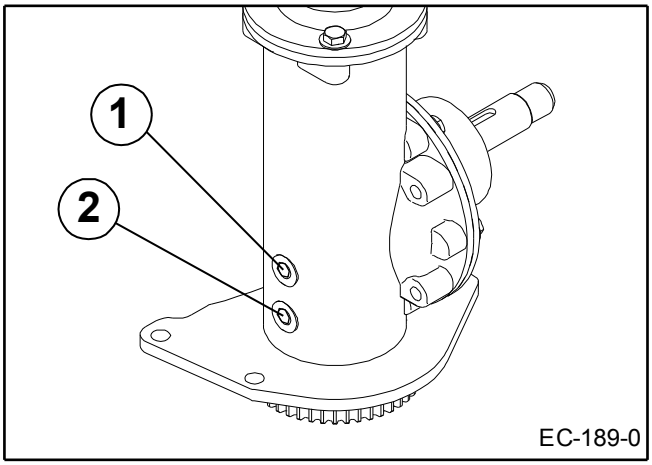


Fig. 288:

Oil level check:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Unscrew the inspection screw (1)
- Oil level up to bore hole (1)
- If necessary, top up the oil (SAE 90)
- Screw the check screw (1) back in.

Oil change:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Screw out the screw plug (2).
- Collect the used oil in a suitable drip pan
- Screw in the screw plug (2)
- Fill oil (1) (oil level up to hole (1))

Oil quality / oil quantity: see Chapter "Filling Quantities and Lubricant Designations for Gearboxes"

Note

The used oil must be disposed of correctly

14.12 Gearbox for Top Roller Drive (optional)

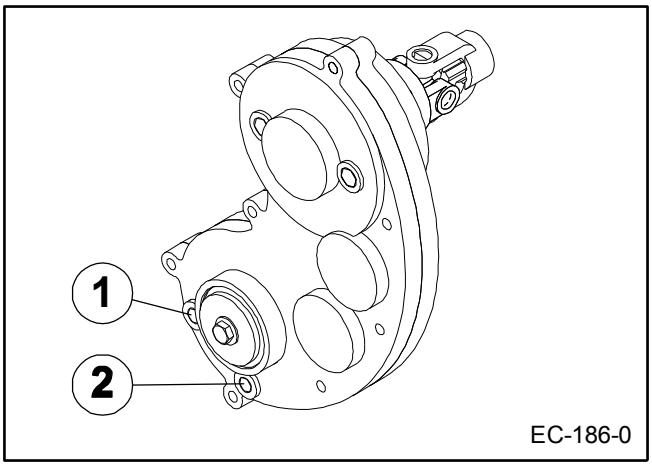


Fig. 289:

Oil level check:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Unscrew the inspection screw (1)
- Oil level up to bore hole (1)
- If necessary, top up the oil (SAE 90)
- Screw the check screw (1) back in.

Oil change:

- For time intervals, see Chapter "Oil Level Check and Oil Change Intervals (Gearboxes)".
- Screw out the screw plug (2).
- Collect the used oil in a suitable drip pan
- Screw in the screw plug (2)
- Fill oil (1) (oil level up to hole (1))

Oil quality / oil quantity: see Chapter "Filling Quantities and Lubricant Designations for Gearboxes"

Note

The used oil must be disposed of correctly

14.13 Oil level check and oil change on the cutter bar

14.13.1 Front mowing unit

Danger!

Rapidly rotating cutting discs/blade drums.

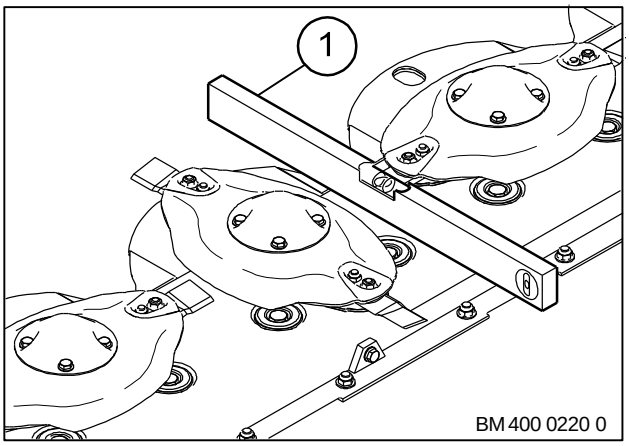
Effect: Danger to life or serious injuries.

- **Switch off the engine and remove the ignition key.**
- **The cutting discs/blade drums continue to run!**
- **Do not leave the driver's cab until the cutting discs/blade drums have come to a complete stop.**

14.13.2 Aligning the Cutter Bar

Prerequisite:

- Switch off the travelling gear release switch
- Use the multi-function lever to move the 3 mowing units into working position (float setting).



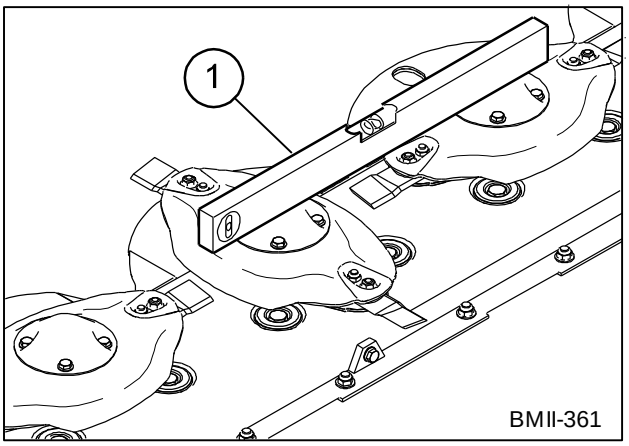


Fig. 290:

Aligning the mowing units crosswise

- Place a manual spirit level centred on the cutter bars.

Standard design:

- Align the cutter bars horizontally (see Chapter "Setting for Cutting Height on the Front Mowing Unit" and Setting for Cutting Height on the Lateral Mowing Unit").

With hydraulic cutting height option:

- Align the cutting bars horizontally (See Info Centre chapter "Aligning the Mowing Units").

Lengthwise

- Place manual spirit level (1) on two cutting discs.
- Use wedges to align the cutter bar horizontally.

14.13.3 Checking the oil level

Danger!

Rapidly rotating cutting discs/blade drums.

Effect: Danger to life or serious injuries.

Lower guards. Nobody should be in the danger zone around the machine.

Danger!

Rapidly rotating cutting discs/blade drums.

Effect: Danger to life or serious injuries.

- **Switch off the engine and remove the ignition key.**
- **The cutting discs/blade drums continue to run!**
- **Do not leave the driver's cab until the cutting discs/blade drums have come to a complete stop.**

Allow the machine to run briefly. Do not leave the driver's cab until the cutting discs/blade drums have come to a complete stop.

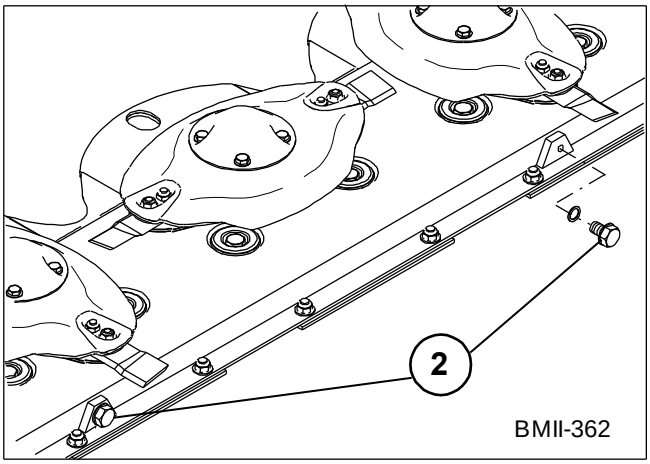


Fig. 291:

- Unscrew one of the two oil level inspection screws (2) on the cutter bar.
- The oil level must be up to the bore hole. If necessary, top up the oil (SAE 90)
- Screw in the oil level inspection screw (2) again and tighten in securely.

14.13.4 Oil change

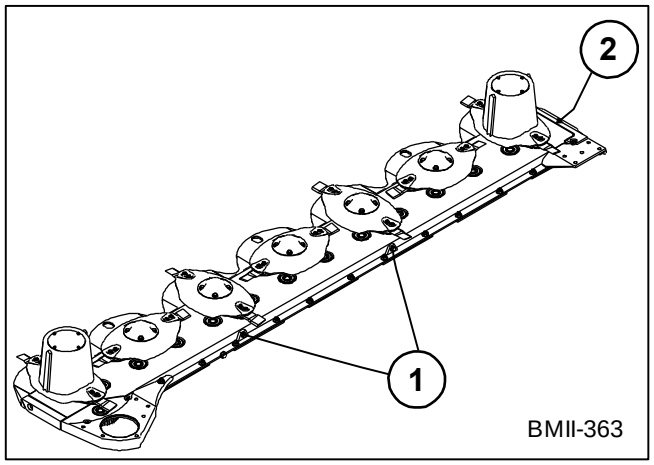


Fig. 292:

- Lift the mowing unit slightly and set a wooden beam underneath on the opposite side of the cover (2).
- Lower the mowing unit so that the cutter bar is resting on the wooden beam.
- Switch off the engine, remove the ignition key, and secure the machine from rolling away.
- Collect the used oil in a suitable drip pan.
- Remove cover (2) at the cutter bar end
- Drain the oil.
- Reinstall cover (2) with new seal.
- Unscrew one of the two oil level inspection screws (2) on the cutter bar and add oil.
- Screw in the oil level inspection screw (2) again and tighten in securely.
- To check the oil level, align the cutter bar crosswise and lengthwise (see chapter "Aligning the Cutter Bar").

Note

• Always check the oil level after repair work on the cutter bar.

Oil quality / oil quantity: see Chapter "Filling Quantities and Lubricant Designations for Gearboxes"

Note

The used oil must be disposed of correctly

14.14 Oil level check and oil change on the cutter bar

14.14.1 Lateral Mowing Unit

Danger!

Rapidly rotating cutting discs/blade drums.

Effect: Danger to life or serious injuries.

Lower guards. Nobody should be in the danger zone around the machine.

Danger!

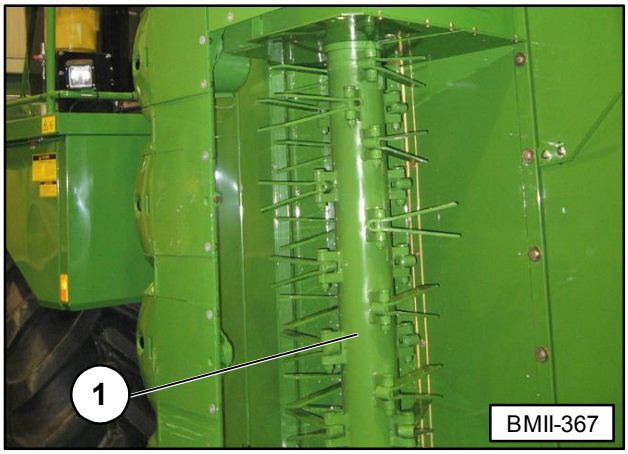
Rapidly rotating cutting discs/blade drums.

Effect: Danger to life or serious injuries.

- **Switch off the engine and remove the ignition key.**
- **The cutting discs/blade drums continue to run!**
- **Do not leave the driver's cab until the cutting discs/blade drums have come to a complete stop.**

14.14.2 Checking the oil level

- Allow the mowing unit to run briefly in working position.
- Wait until the cutter bars have come to a complete stop.
- Fold up the lateral mowing units.



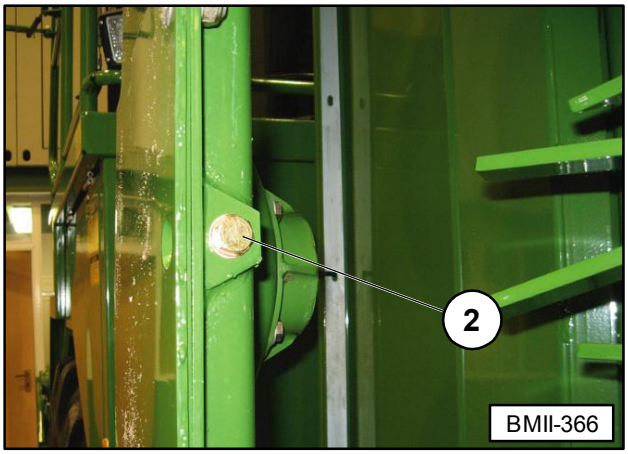


Fig. 293:

- Slightly loosen the lower oil level inspection screws (2) on the cutter bar (1) of the right/left lateral mowing units.

Note

If oil emerges from the hole, the oil level is correct. Otherwise add oil (SAE 90).

- Tighten the oil level inspection screws (2) again.

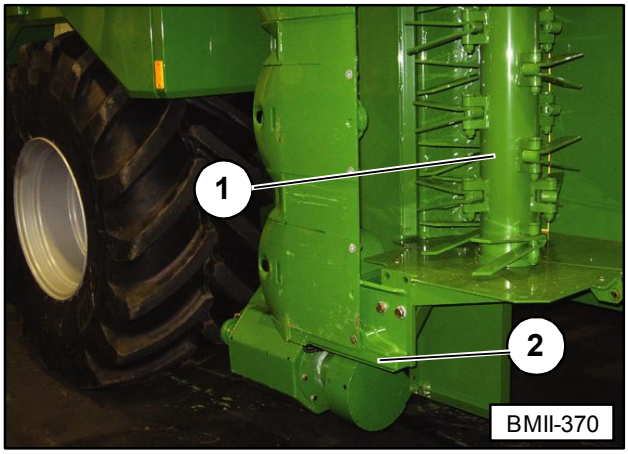
14.14.3 Oil change

Danger!

Rapidly rotating cutting discs/blade drums.

Effect: Danger to life or serious injuries.

- **Switch off the engine and remove the ignition key.**
- **The cutting discs/blade drums continue to run!**
- **Do not leave the driver's cab until the cutting discs/blade drums have come to a complete stop.**



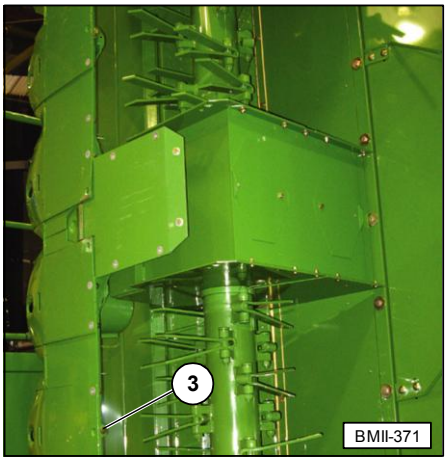


Fig. 294:

- Fold up the right/left lateral mowing units (1).
- Collect the used oil in a suitable drip pan.
- Remove the lower cover (2) on the cutter bar.
- Reinstall cover (2) with new seal.
- Add oil at the lower inspection screws (3).
- Check oil level (see chapter "Checking the Oil Level").

Note

• Always check the oil level after repair work on the cutter bar.

Oil quality / oil quantity: see Chapter "Filling Quantities and Lubricant Designations for Gearboxes"

Note

The used oil must be disposed of correctly

14.15 Checking the Cutter Blades and Blade Holder

Warning!

Missing and damaged cutter blades and cutter blade retainers.

Effect: Danger to life, serious injuries or damage to the machine

- **Check cutter blades at least once per day and**
- **check retaining bolts every time you change the blades or after contact with foreign objects.**
- **Immediately replace missing or damaged cutter blades and cutter blade retainers**

14.15.1 Cutter Blades

Danger!

Insufficient thickness of material on the cutter blades.

Effect: Danger to life or serious injuries.

- **If the thickness of the material between the hole and the end of the cutter blade has reduced to less than** a = 7 mm, replace the cutter blade.

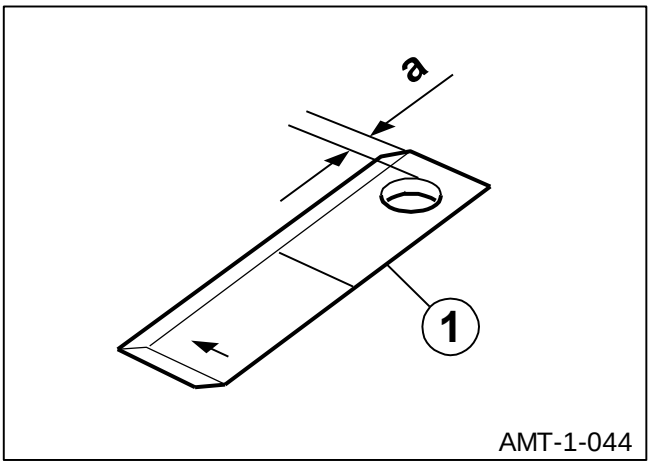


Fig. 295:

Note

The cutter blades can be turned around and used on both sides.

- **When cutter blades are missing or damaged, they must be replaced as a complete set.**
- **This prevents dangerous unbalanced rotation.**

14.15.2 Blade screw connection

Danger!

Insufficient thickness of material on the retaining bolts.

Effect: Danger to life or serious injuries.

- **At every blade changing check the thickness of the holding bolts material.**
- **Damage or worn retaining bolts must always be replaced by sets on each cutting disc/blade drum!**
- **The material thickness of the retaining bolts must not be less than 14 mm at the weakest point.**

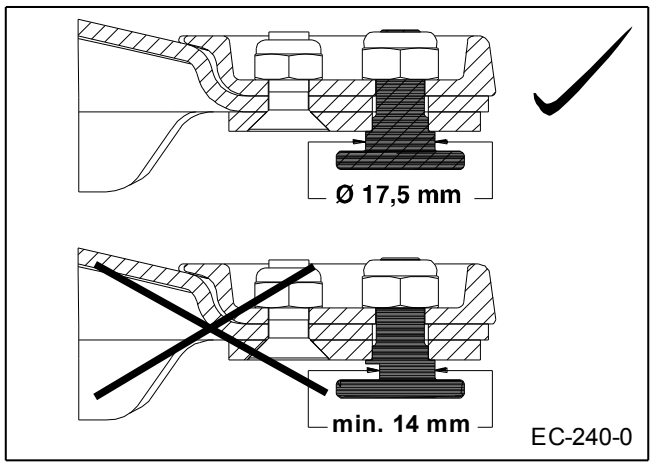


Fig. 296:

14.15.3 Blade Quick-Fit Device

Danger!

Insufficient thickness of material on the retaining bolts.

Effect: Danger to life or serious injuries.

- **At every blade changing check the thickness of the holding bolts material.**
- **Damage or worn retaining bolts must always be replaced by sets on each cutting disc/blade drum!**
- **The material thickness of the retaining bolts must not be less than 14 mm at the weakest point.**
- **The material thickness of the leaf spring must not be less than 3 mm at the weakest point.**

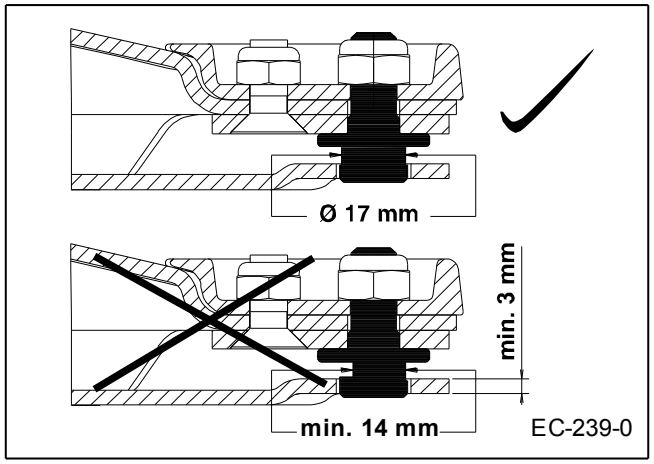


Fig. 297:

14.15.4 Periodical Inspection of the Leaf Springs

Danger!

Worn application seam on the leaf springs.

Effect: Danger to life or serious injuries.

- **Check the leaf springs for damages at least once a day or after contact with foreign objects.**
- **The abrasion limit of the leaf springs will be achieved if the application seam (1) is worn on one point.**

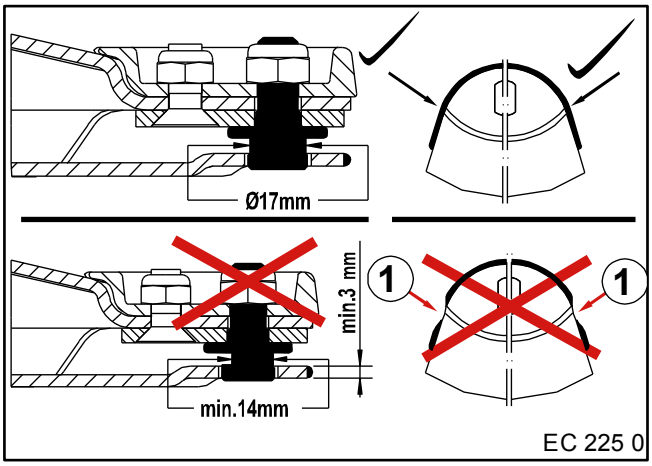


Fig. 298:

Note

Warranty claim

Use only original Krone spare parts to replace the leaf springs.

14.15.5 Periodical Inspection of the Cutting Discs / Blade Drums

Danger!

Deformed Cutting Discs / Blade Drums

Effect: Danger to life or serious injuries.

- **Check the cutting discs or blade drums for damages at least once per day or after contact with foreign objects.**
- **In case of deformed cuttings discs or drums, the dimension of A = 48 mm must never be exceeded.**

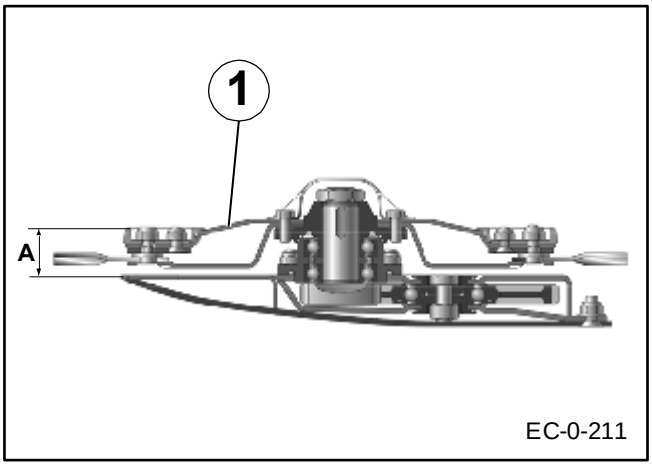


Fig. 299:

Note

Warranty claim

The cutting discs or drums must be replaced by Original Krone spare parts only.

14.15.6 Abrasion Limit

Danger!

Abrasion on the cutting discs / blade drums

Effect: Danger to life or serious injuries.

- **The abrasion limit (2) will be achieved if the min. material thickness of 3 mm is no longer given.**

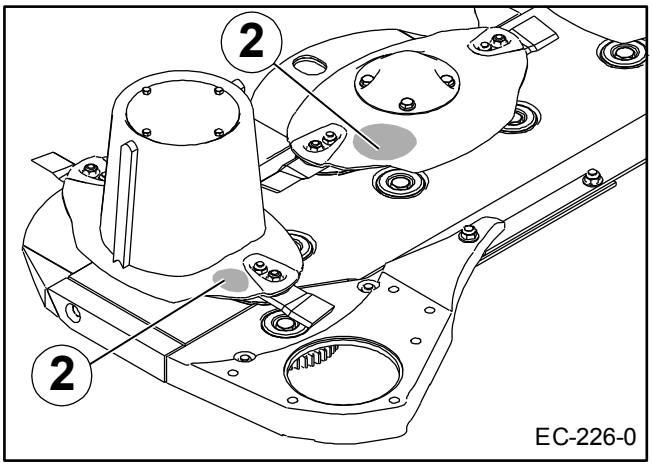


Fig. 300:

Note

Warranty claim

If cutting discs or blade drums show deformations or wear in form of abrasions (2) or similar, these components have to be replaced by Original Krone spare parts .

14.16 Blade Changing on Cutting Discs

Danger!

Rapidly rotating cutting discs/blade drums.

Effect: Danger to life or serious injuries.

- **Switch off the engine and remove the ignition key.**
- **The cutting discs/blade drums continue to run!**
- **Do not leave the driver's cab until the cutting discs/blade drums have come to a complete stop.**

Danger!

Cutter blades coming loose

Effect: Danger to life or serious injuries.

- **After changing the blades check that they fit perfectly and that they can move freely.**
- **Whenever a blade is changed, also inspect the fasteners and replace them, if necessary!**
- **Always replace missing and damaged blades in sets to prevent unbalanced rotation!**
- **Never mount unevenly worn blades on a drum/disc!**

14.16.1 Blade Screw Connection

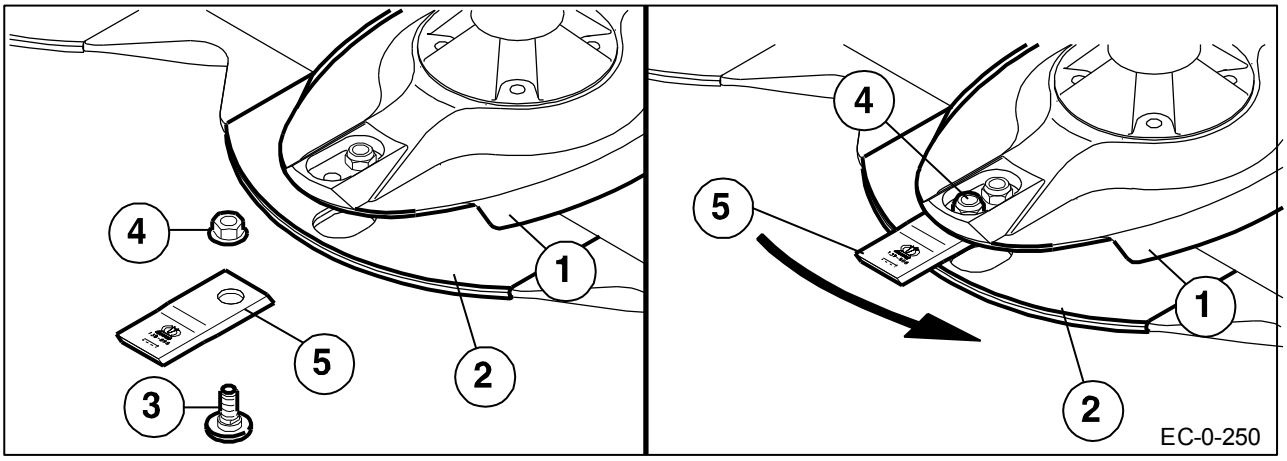


Fig. 301:

- Clean the area.
- Remove damaged or worn blades.
- To fit the blades, insert the blade (5) between the wear plate (2) and the cutting disc (1).
- Insert the retaining bolt (3) from below through the wear plate, the blade and the cutting disc.
- Place the hex nut (4) on the retaining bolt from above and tighten it firmly. (for tightening torque see chapter entitled "Torques")
- Repeat this process for all blades, even on the blade drums.
- After fitting the blades, fold the protective device down again.

Note

- **The cutter blades of anticlockwise rotating cutting discs / blade drums are different than those of clockwise rotating ones. Make certain the direction of rotation is correct when installing!**
- **The arrow on the cutter blades must match the direction of rotation of the corresponding cutting discs / blade drums.**
- **The hex nut (4) used to secure the retaining bolts must not be used more than once.**

Order No. for clockwise rotating blade: 139-889

Order No. for anticlockwise rotating blade: 139-888

14.16.2 Blade Quick-Fit Device

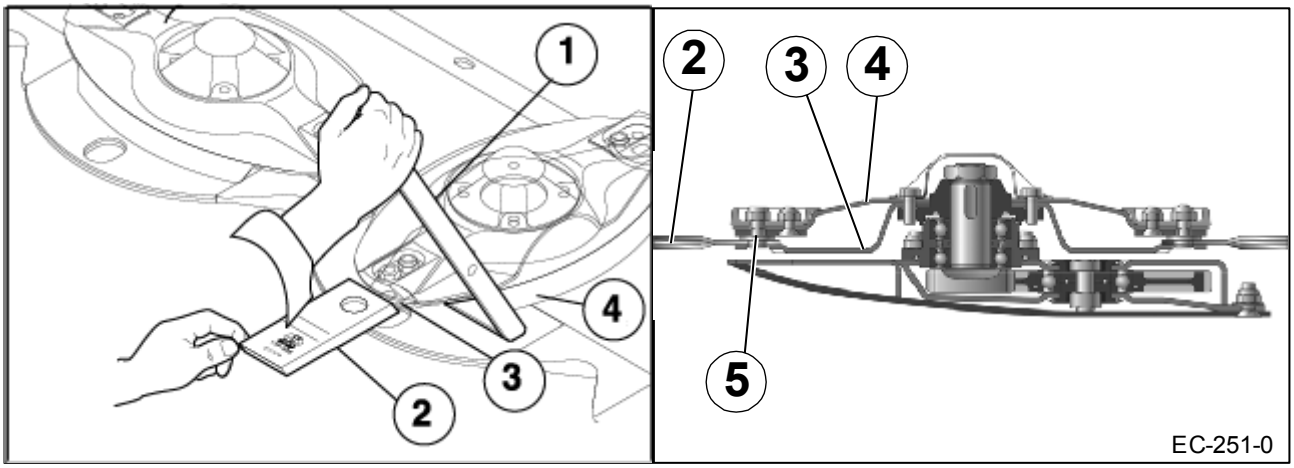


Fig. 302:

- Clean the area.
- Remove damaged or worn blades.
- Push the special tool (1) {blade key} between the cutter disc (4) and leaf spring (3) and press down with one hand.
- Guide a new blade (2) onto the retaining bolt and allow the blade key to return upwards.
- After fitting the blades, fold the protective device down again.

Note

- **The cutter blades of anticlockwise rotating cutting discs / blade drums are different than those of clockwise rotating ones. Make certain the direction of rotation is correct when installing!**
- **The arrow on the cutter blades must match the direction of rotation of the corresponding cutting discs / blade drums.**
- **The hex nut (4) used to secure the retaining bolts must not be used more than once.**

Order No. for clockwise rotating blade: 139-889

Order No. for anticlockwise rotating blade: 139-888

14.17 Replacing the linings

Caution!
If the linings are checked irregularly.
Effect: Damage to the machine

- **Always check the mowing unit for damaged linings prior to start-up and replace linings, if necessary!**
- **Adjust the welding current and the welding material to the cutter bar material and to the lining or carry out a trial welding if necessary.•**

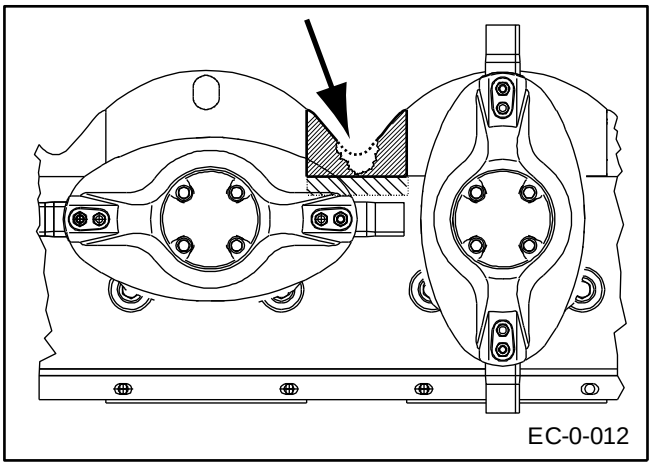


Fig. 303:

- Open the welding seams of the old lining.
- Remove the lining
- Deburr the contact surface.

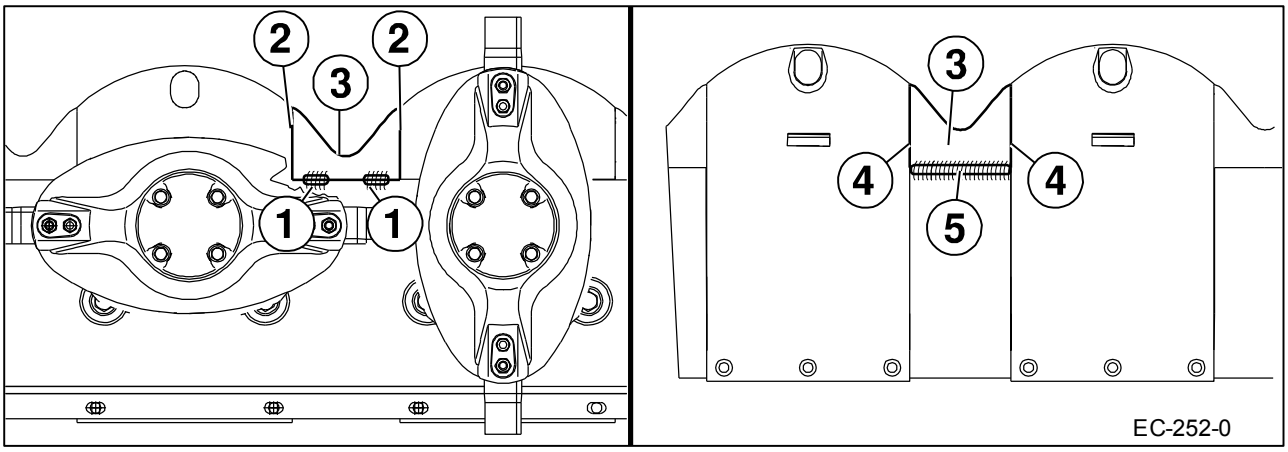


Fig. 304:

- Adapt the new lining (3).
- Weld short I seams on the **upper surface** of the cutter bar in the areas marked (1) (each should be approx. 30 mm).
- Do not weld the edges (2).
- On the **lower surface** of the cutter bar, weld the lining (3) to the cutter bar along the whole length in area (5).
- Do not weld the edges (4).

14.18 Rotary hub with shear protection

Danger!

Rapidly rotating cutting discs/blade drums.

Effect: Danger to life or serious injuries.

- **Switch off the engine and remove the ignition key.**
- **The cutting discs/blade drums continue to run!**
- **Do not leave the driver's cab until the cutting discs/blade drums have come to a complete stop.**

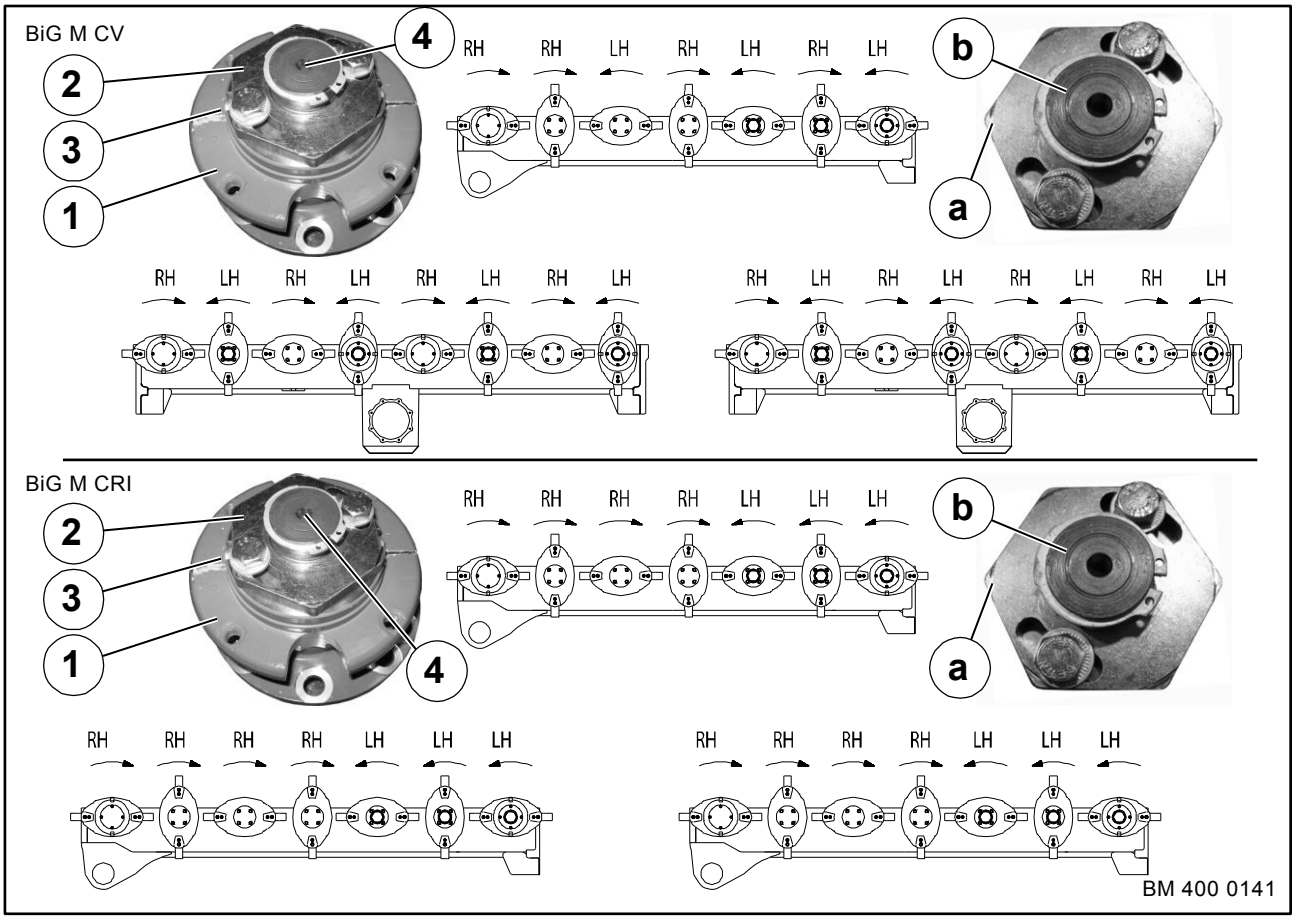


Fig. 305:

For protection against overload on the mowing units, the rotary hubs (1) are secured with nuts (2) and shear pins (3).
If the machine strikes obstacles (for example stones), the 2 shear pins in the rotary hub will be sheared off. The rotary hub and nut turn upward on the pinion shaft.

- The cutting discs or drums which move crop to the left (in the direction of travel) (LH) have left-handed threading.
- The cutting discs or drums which move crop to the right (in the direction of travel) (RH) have right-handed threading.

To distinguish between right-hand (clockwise) rotation (RH) and left-hand (anti-clockwise) rotation (LH), the nuts (2) and pinion shaft (4) for left-hand rotation (LH) have a distinctive grove (a, b).

- Left-handed (LH) nuts (2) have distinctive grooves (a) on the bevel.
- Left-handed (LH) pinion shafts (4) have a distinctive groove (b) on the face.

14.18.1 After Shearing Off

Caution!

Correct installation position of the bearing housing not observed.

Effect: Damages to the machine

- **Right-hand (RH) cutting discs and drums always have right-handed pinion shafts and nuts (no groove mark on the pinion shaft and nut).**
- **Left-hand (LH) cutting discs and drums always have left-handed pinion shafts and nuts**
- **Left-handed threading (with groove mark on the pinion shaft and nut.)**

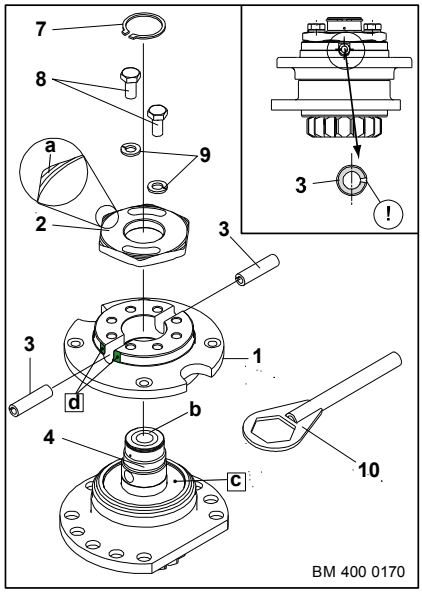


Fig. 306:

- Remove the cutting disc or drum.
- Remove retaining ring (7).
- Unscrew the hexagon head bolt (8).
- Use the special key (10) included with delivery to remove the nut (2).
- Remove the hub (1).
- Remove the damaged shear pins (3).
- Check the nut and hub for damage.
- Fill the space above the taper roller bearing with grease (c).
- Place the hub on the pinion shaft.
- Drive the new shear pins (3) through the hub (1) and shaft (4).

Note

Note the position of the shear pins!

- **Drive the shear pins (3) into the hole from outside until the end of the pin reaches the surface of the hub (d).**
- **The slots of the shear pins (3) must be mounted facing each other horizontally (see detail (I)).**

- Install the nut (2) using the special key (10) included with delivery (tighten to a tightening torque of 300 Nm).
- Install and tighten the hexagon head bolts (8) with detent edged washers.
- Install the cutting disc (5) or blade drum (6).

15 Maintenance – Basic Machine

Danger!

Unexpected actions on the machine

Effect: Danger to life, injuries or damage to the machine.

- **Always make certain that the drive and the engine are switched off before doing any repairs, maintenance or cleaning. Remove the ignition key!**
- **Maintenance and repair work on safety-related components such as steering or brakes must only be performed by authorised workshops.**

15.1 Brakes

Danger!

Problem with brakes

Effect: Danger to life, injuries or damage to the machine.

- **The brake function must be checked before the start of every trip.**
- **The footbrake must take effect beginning with the first third of pedal travel.**
- **Check the brake linings regularly.**
- **Adjustment and repair work on the brake system must only be performed by professional workshops or recognised brake services!**

15.2 Hydraulic system

Danger!

Caution with leaking lines

Effect: Danger to life, injuries or damage to the machine.

- **When searching for leaks, use suitable aids, always use suitable tools and wear protective goggles to avoid the risk of injury!**
- **Escaping high-pressure fluids can penetrate the skin and cause serious injury. Therefore, you must depressurise the system before disconnecting lines.**
- **Hydraulic oil escaping from a small opening can barely be seen. Because of this you should use a piece of cardboard or something similar when searching for leaks. Protect your hands and body.**
- **If any fluid penetrates the skin, it must be removed immediately by a doctor who is familiar with this kind of injury; serious infections could otherwise result. Physicians who are not familiar with this area should consult appropriate information from a competent medical source.**
- **Check the hydraulic hose lines at regular intervals and replace them if damaged or worn! The replacement lines must comply with the requirements of the device manufacturer.**
- **Ensure that all line connections are tight before the pressure in the system builds up again.**
- **Repair work on the hydraulic system must only be performed by authorised KRONE professional workshops.**

	Maintenance work	Maintenance interval								
		Once after 10 hours	Before the beginning of the season	Every 10 hours but at least 1x daily	Once after 50 hours	Every 100 hours	Every 200 hours but at least 1x annually	Every 500 hours but at least 1x annually	After every third season	As required
	Hydraulic system						15.2.			
	Hydraulic oil level check		X	X						
	Changing the hydraulic fluid							X		
	Replacing the hydraulic oil filter				X			X		
	Transfer gearbox									
	Oil level check		X	X						
	Oil change				X			X		
	Cabin									
	Replace fresh air filter							X		
	Clean fresh air filter									X
	Replace circulation filter							X		
	Clean circulation filter									X
	Windshield wiper system			X						X
	Pilot lamp test		X							
	Light function test		X							
	Check the foot brake setting.						X			
	Adjust parking brake Bowden cable if necessary.						X			
	Air conditioning system/heating									
	Collector/drier									
	Refrigerant condition and filling quantity						X			
	Checking the capacitor									X

	Maintenance work	Maintenance interval								
		Once after 10 hours	Before the beginning of the season	Every 10 hours but at least 1x daily	Once after 50 hours	Every 100 hours	Every 200 hours but at least 1x annually	Every 500 hours but at least 1x annually	After every third season	As required
	Belt drives									
	Fan wheel drive	X					X			
	Drive for outrigger arms	X					X			
	Drive for lateral mowing units	X					X			
	Tyre			X						
	Check battery for cuts and breaks		X							
	Inspect tyre air pressure visually		X							
	Measure tyre air pressure with instrument: weekly									
	Tighten wheel nuts for front/rear wheel to 630 Nm (466 lb-ft).	X					X			
	Tighten bolts									
	Tighten the fastening screws of the guide cylinder anchor on the rear axle.	X					X			
	Tighten the fastening screws of the guide cylinder anchor on the wheel hubs.	X					X			
	Tighten the fastening screws on the track rod.	X					X			
	Tighten attachment bolts of outriggers on the frame.	X					X			
	Check pressure filter (every 1500 h)									
	Steering pump pressure filter									
	Pressure filter, leakage oil pipe for wheel motors									
	Work pump pressure filter									
	Supply pump pressure filter									
	Battery									
	Check the acid density of the battery; charge the battery, if and when necessary, and top up with distilled water.						X			

15.3 Maintenance - hydraulic system

15.3.1 System Description Operating and Brake Hydraulics

15.3.2 Pumps

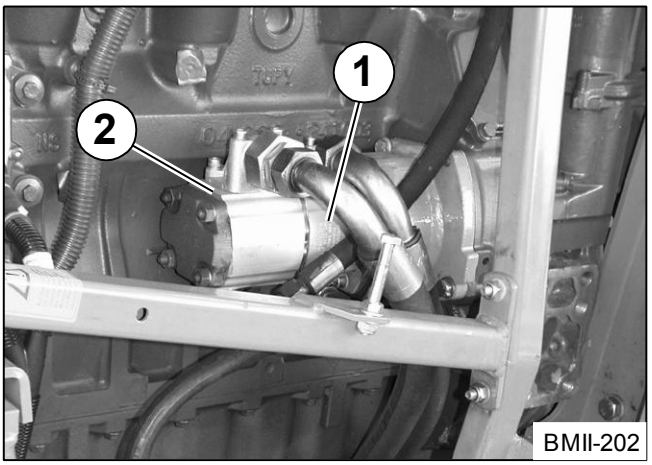


Fig. 307:

1. Steering pump
2. Brake hydraulics - lifting

15.3.3 Main block

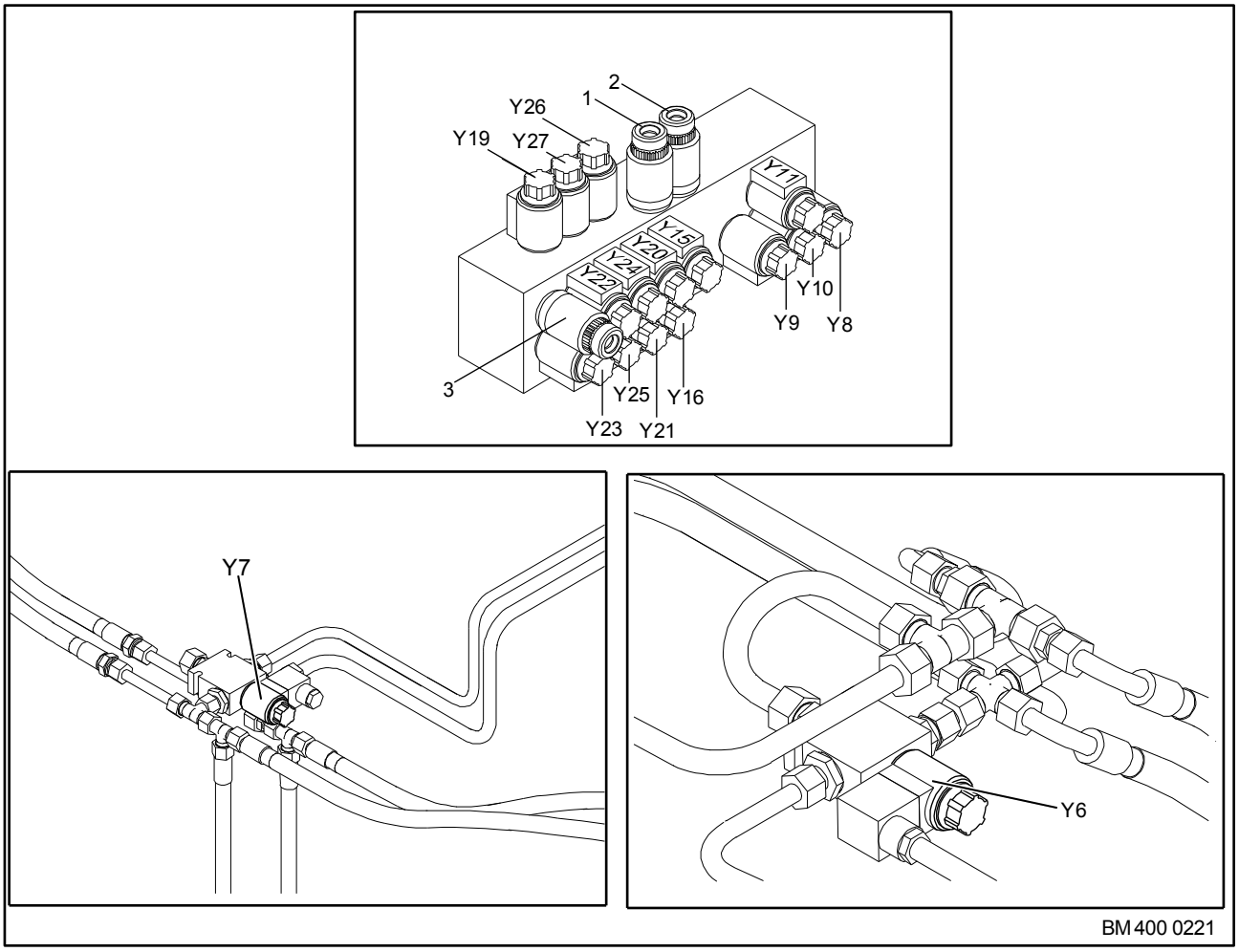


Fig. 308:

NO.	Designation
1	Suspension pressure control
2	Drive pressure control
3	Master control valve pressure control
Y6	Switching to front axle
Y7	Switching to rear axle
Y8	Front drive
Y9	Right drive
Y10	Left drive
Y11	Parking Brake
Y15	Lift suspension
Y16	Lower suspension
Y19	Main valve
Y20	Lift front
Y21	Lower front
Y22	Lift right
Y23	Lower right
Y24	Lift left
Y25	Lower left
Y26	Push off left
Y27	Push off right

15.3.4 Over-pressure valves

Note

Over-pressure valves set in the factory
Work on the over-pressure valve must be carried out only by the customer service department.

The valve blocks have been equipped with pressure control valves. These valves were set at the factory and must not be changed.

15.3.5 Adjustable Throttles

Speed of moving the front mowing unit into operating position

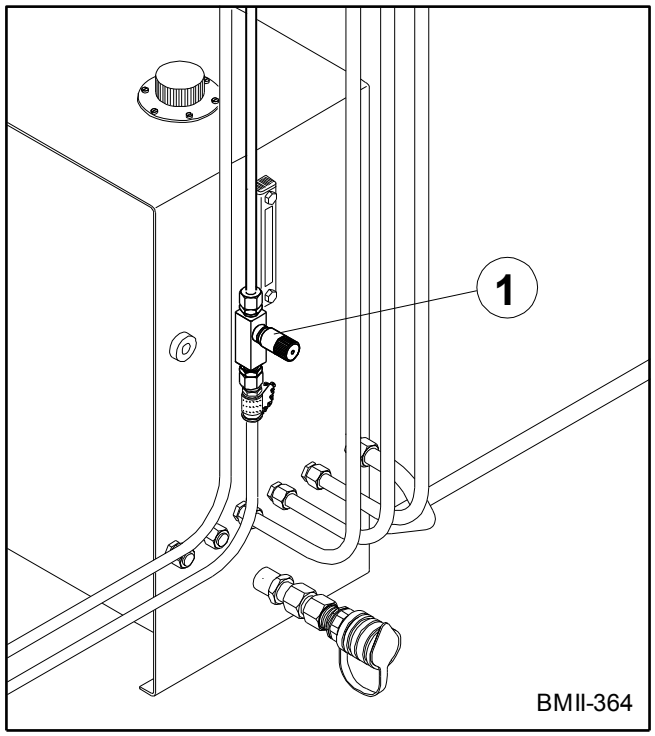


Fig. 309:

The adjustable throttle (1) to set the speed to move the front mowing unit is located next to the hydraulic tank, on the left-hand side in direction of travel.

15.4 Hydraulic oil

Caution!

Never mix different oils.

- **Before changing types of oil please consult our Customer Service.**

Never use engine oil.

15.4.1 List of Mineral Oils for the Hydraulic System

List of mineral oils of quality class HLP (HM) and environmentally friendly HEPG pressure fluids that decompose quickly.

ISO viscosity class	15.4.1.1 HEPG VG 46	HLP VG 46
Manufacturer		
ADDINOL		Hydraulic oil HLP 46
AGIP		OSO 46
ARAL	BAF 46Vitam	Aral Vitam GF 4
ASEOL	Aqua VG 46	
AVIA	Avia Hydrosynth 46	AVILUB RSL 46 Avia Fluid ZAD 46
BECHEM	Hydrostar UWF 46	
BP	Biohyd PEG 46	Energol HLP 46
CASTROL		HYSPIN AWS 46
COFRAN		Cofraline extra 46 S
DEA	Econa PG 46	Astron HLP 46
ELF		ELFOLNA 46 ELFOLNA DS 46
ENGEN		Engen TQH 20/46
ESSO	Hydraulic oil PGK 46	NUTO H 46
FINA	Hydraulic oil	

ISO viscosity class	HEPG VG 46	HLP VG 46
Manufacturer		
FRAGOL	Hydraulic TR 46	
FUCHS	Renolin PGE 46	RENOLIN MR 15 VG 46 RENOLIN B15 VG 46
Houghton	Syntolubric 46	
KLÜBER		LAMORA HLP 46
KUWAIT		Q8 Haydn 46 Holst 46 Hydraulic S46
LIQUI MOLY		HLP 46 ISO
Mobil		Mobil DTE 25 Mobil Hydraulic Oil Medium
SHELL	Fluid BD 46	Shell Tellus Oil 46 Shell Hydrol DO 46
Stuart Theunissen	Hydrocor E46 ISOCOR E46	Cofraline extra 46 S
TOTAL		Azolla ZS 46
TRIBOL		Tribol 772 Tribol ET 1140-46 Tribol 943 AW 46
VALVOLINE	Ultrasyn PG 46	
VERKOL		Vesta HLP 46
WINTERSHALL		WIOLAN HS 46

	D3031.46	HYDRAN 46			WIOLAN HX 4

15.5 Hydraulic oil level

Danger!

Unexpected actions on the machine

Effect: Danger to life, injuries or damage to the machine.

- **When working on the hydraulic system, always switch off the engine.**
- **Remove the ignition key**
- **Secure the machine against rolling (parking brake, wheel chocks)**

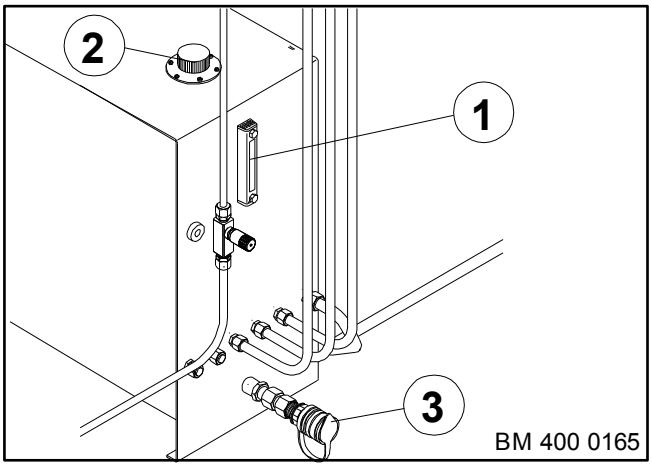


Fig. 310:

Before checking oil level:

- Park the machine horizontally
- Lower all mowing units and switch off the engine.

Oil level check:

- Time interval: Daily
- The oil must be visible in the inspection window (1).
- Refill oil if necessary (2)

Oil change:

- Time intervals: every 500 hours or when the filter warning indicator lights, but at least once a year
- Drain oil with suitable hose via plug-in connection (3)
- Collect the used oil in a suitable collection vessel.
- Top up the oil (2)
- Oil level (oil must be visible in inspection window (1)).

Capacity: approx. 80 l (approx. 21 U.S. gal)

Note

The used oil must be disposed of correctly

15.6 Replacing the hydraulic oil filter

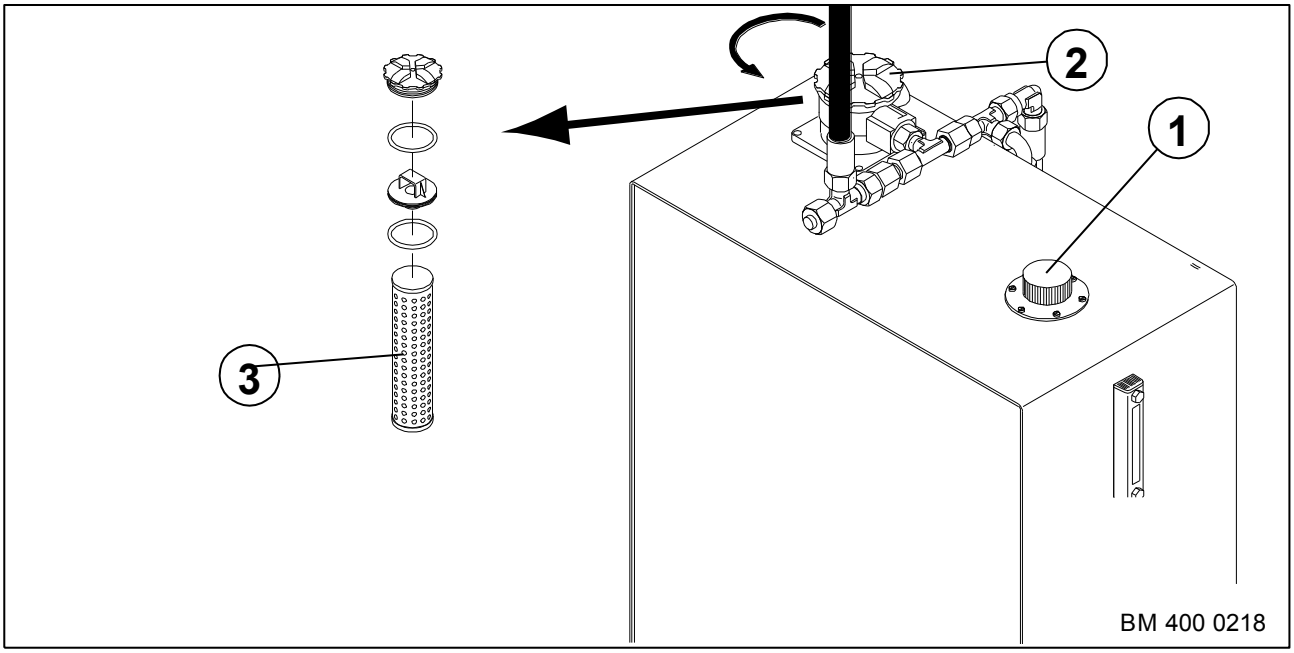


Fig. 311:

Note
Ensure total cleanliness when changing the filter
Properly dispose of filter cartridge that was removed

- Replace the filter element (3) the first time after 50 operating hours, then every 500 operating hours or after each mowing season (at the same time as changing the hydraulic oil).
- Release the filter (2) and unscrew it from its holding.
- Replace the filter with a new filter.

Screw on new filter as follows:

- Moisten the sealing surface of the filter with oil.
- Once the filter seal touches the sealing surface of the filter housing, tighten the filter manually making a 3/4 to 1-1/4 turn. Do not over tighten.
- Check the filter for leaks while the engine is running and tighten if necessary.

15.7 Transfer gearbox

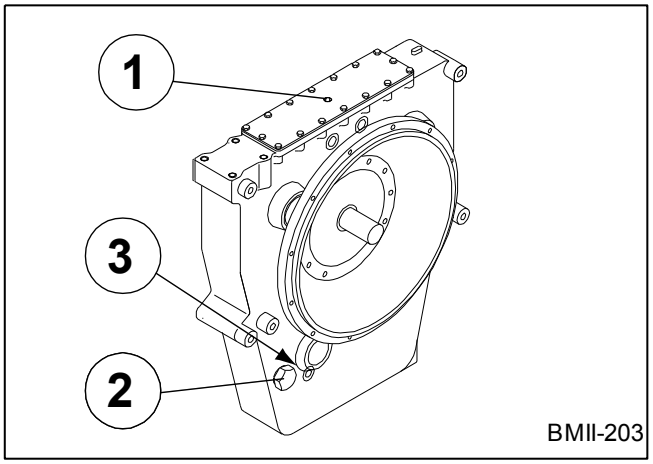


Fig. 312:

Note

Use only gearbox oil (synthetic DIN 51502-PGLP) and dispose of used oil properly.

Oil level check:

- Time interval: before every use
- Unscrew the inspection screw (2)
- Oil level up to bore hole
- If necessary, top up oil (synthetic DIN 51502-PGLP)
- Screw the check screw (2) back in.

Oil change:

- Change the oil after the first 30 to 50 operating hours. Thereafter, ever 500 hours (but at least once a year)
- Screw out the screw plug (3).
- Collect the used oil in a suitable drip pan
- Screw in the screw plug (3)
- Top up the oil (1) (oil level up to hole (2))

Capacity: 6,0 l

15.8 Air intake and distribution

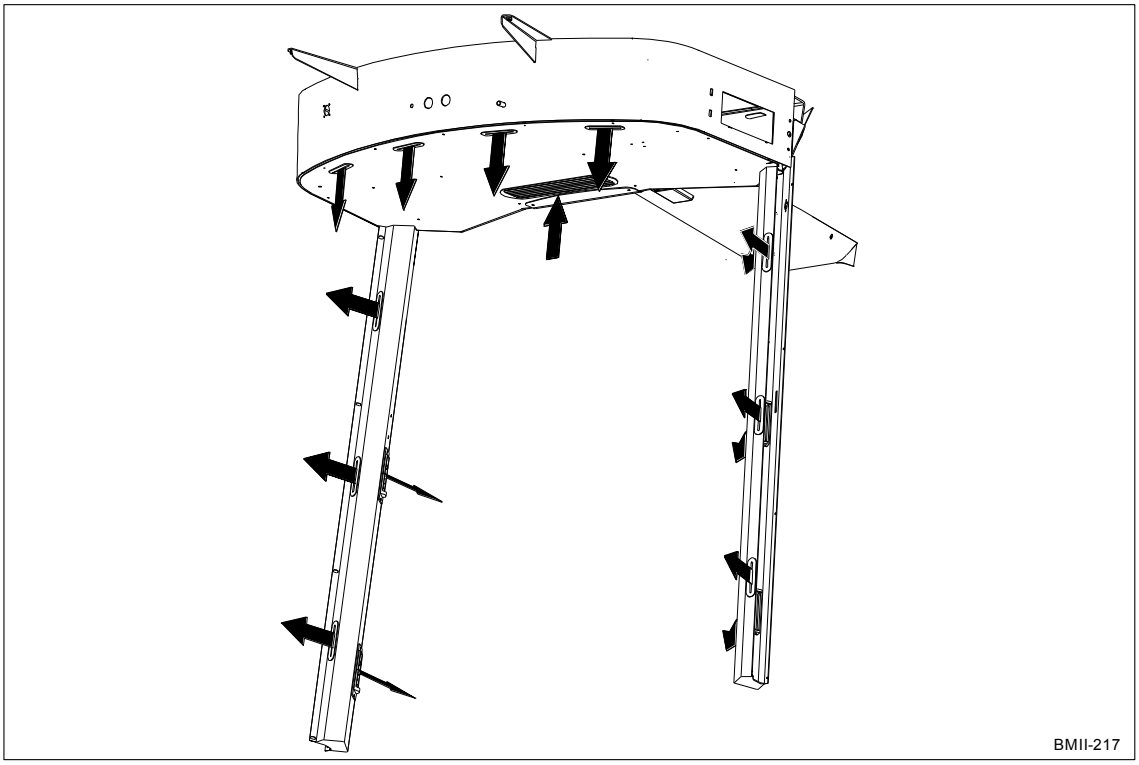


Fig. 313:

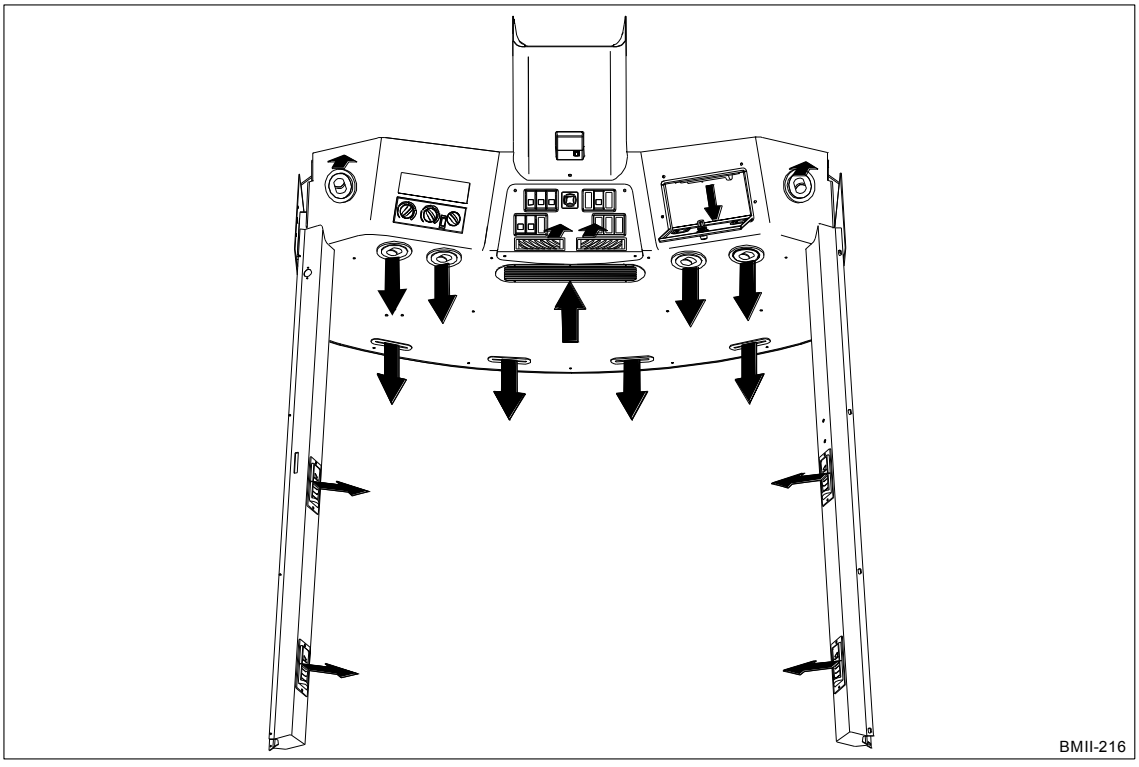


Fig. 314:

15.8.1 Fresh air fan

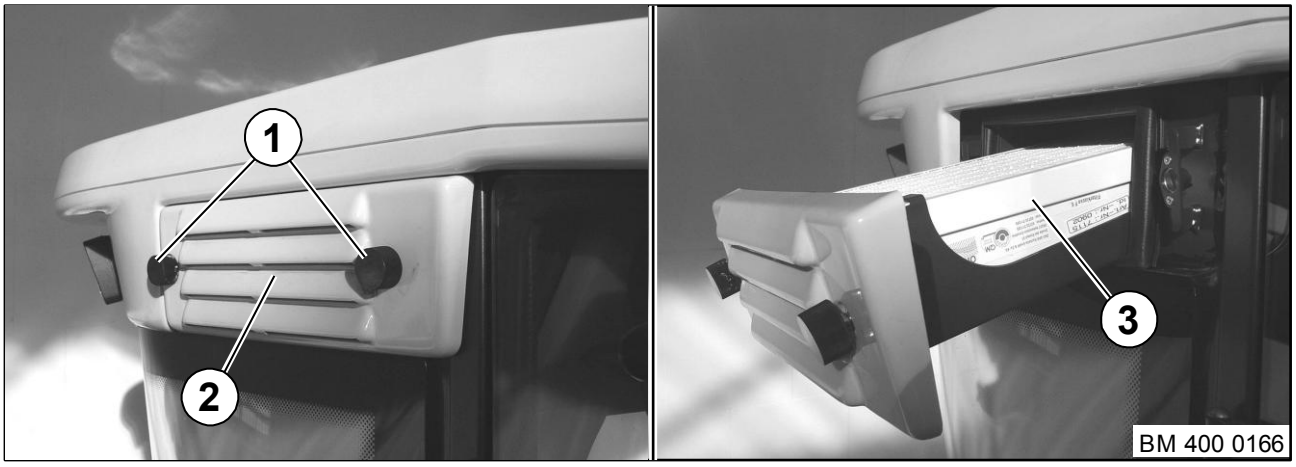


Fig. 315:

A fresh air filter (3) in the form of a wedge filter cell is located in the upper cab area behind the gill screen (2) on the left hand side in direction of travel. This filter (3) protects the driver in the cab against dust or airborne dirt, which is outside the cab. Check the filter for soiling prior to any operation.

Note

If filters are not properly maintained they may become very soiled, no longer ensuring that sufficient fresh air is passed into the cab.

- Open the closing device (1) by turning 90° clockwise.
- Pull the gill screen (2) out; check the wedge filter cell (3) for soiling and clean, if and when necessary.

Shake out the filter (3); never use compressed air. In case of severe soiling, the filter (3) has to be replaced.

15.8.2 Circulation filter

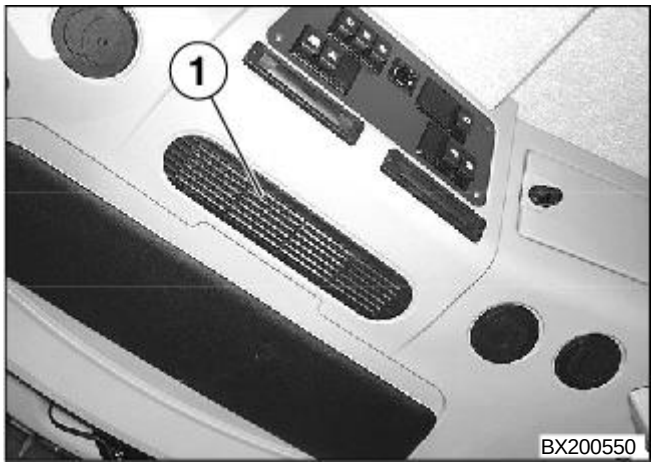


Fig. 316:

Note

If the circulating air filter (1) is very dirty, the output of the air conditioning system may be reduced and it may heat up.

- Clean the circulating air filter (1) regularly.

15.9 Windscreen washer system

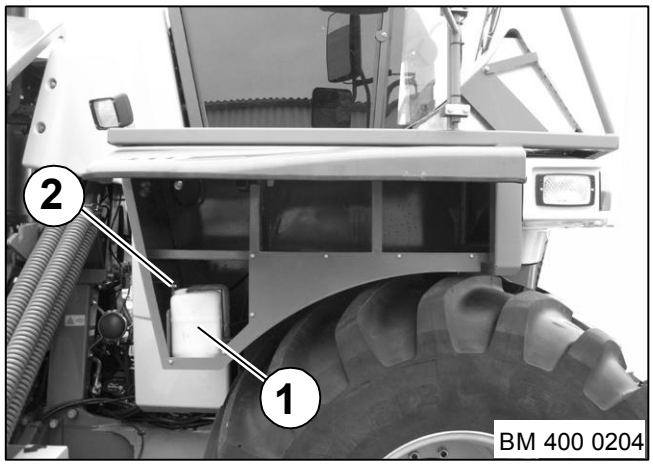


Abb. 317:

Check the level of the windscreen washer system daily. Refill the reservoir if necessary.

- To fill the windscreen washer container (1) open cover (2).

Note

To achieve better cleaning effect under extreme crop and road conditions, add windshield cleaner/antifreeze. In winter empty the washer unit or fill with special frost protection agent.

15.10 Maintenance - air conditioning system and heating

15.11 Special Safety Instructions

Warning!

Contact with refrigerant

Effect: Injuries

- **In case of repair, maintenance and cleaning work on the refrigerant circuit, refrigerant emissions may occur; these emissions may be liquid or gaseous and are a hazard for man and the environment. Take suitable protective measures (wear protective goggles and protective gloves).**
- **Switch off the engine and remove the ignition key.**
- **Secure the machine against the possibility of rolling back.**
- **Repair, upkeep, maintenance and cleaning work must be carried out only by authorised specialists.**
- **In the case of refrigerant burns, always seek medical attention. Bring the datasheet to present to a physician (see Chapter "Refrigerant Data Sheet R 134a (excerpt)).**
- **Ensure sufficient ventilation when working on the refrigerating system.**
- **During refill and repair do not allow refrigerants to escape; dispose of them into a recycling container.**
- **Spare parts that are used must correspond to the technical requirements of the machine manufacturer. For this reason, use KRONE original spare parts only.**
- **Extreme caution is advised when welding close to the air conditioning system**

15.11.1 Air conditioning components

A Compressor

on engine at the left-hand side of the vehicle, driven via V-belt

B Capacitor

behind the radiator unit, accessible from the left and right

C Dryer/collector

behind the radiator unit at the left-hand side of the vehicle

D Evaporator

in the cab roof

E Manometric switch

on drier, behind the radiator unit at the left-hand side of the vehicle

F Expansion valve

at the evaporator inlet

G Air conditioning system/heating rotary switch

in cab, roof panel

15.11.2 Refrigerant data sheet R 134a (excerpt)

Refrigerant R 134a:	
Chemical designation:	1,1,1,2-tetrafluorethane
Chemical formula:	$CH_2F\ CF_3$
Molecular weight:	102.0 g/mol
Boiling point (at 1.013 bar):	-26.1°C
Freezing point:	-101.0°C
Critical temperature:	-101.1°C
Critical pressure:	40.60 bar
Density (liquid at +25° Celsius):	1.206 kg/m^3
Flammability limits	in air - not flammable

Environmental data	
FKW 134a:	
ODP - Ozonolysis potential	ODP = 0
CLP - Chlorine load potential	CLP = 0
HGWP - Greenhouse effect	HGWP = 0.26
PCR - Photochemical reactivity	PCR = 0.5

15.11.3 Technical data

Technical Data	
Component	**Performance data**
Evaporator	Refrigerating capacity* 5;200 Watt*
Heater	Heating capacity 4;000 Watt
Fan	1000 m^3/h free blowing
Voltage	12 Volt
Current consumption	15 amperes
Refrigerant	R 134a (CFC free)

* measured at +30° Celsius ambient temperature (data rendered by the manufacturer)

15.11.3.1 Refrigerant

Note

- **The air conditioning system is operated with 2000 g of refrigerant R134a (tetrafluoroethane). This substance does not contain any chlorine atoms, and thus is inoffensive to the ozone in the atmosphere of the world.**
- **Nonetheless, the refrigerant must not be drained; it must be collected at a recycling plant. For this reason do not sever any connecting pipes. Have maintenance and repair work on the air conditioning system carried out only by your Krone dealer with a suitable disposal and recycling equipment.**

15.11.4 Manometric switch

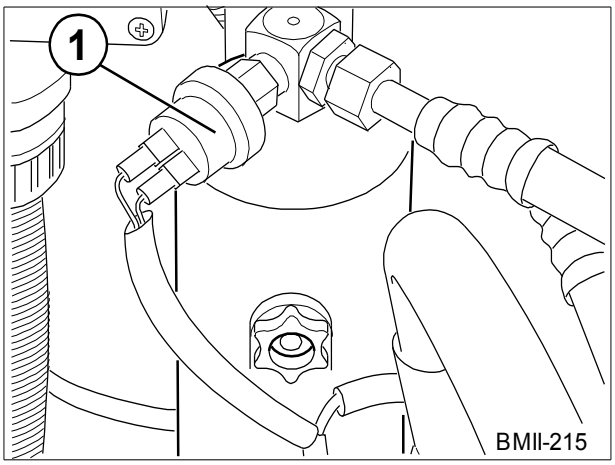


Fig. 318:

Note

When the fan speed is at the highest still pleasant performance, set the cooling performance of the air conditioning system to an average value. Let the air conditioning system not operate at the lowest fan speed and highest cooling performance.

The air conditioning system has been fitted with a manometric switch (1) which shuts down the system in case of excess pressure or negative pressure (on the dryer behind the combined radiator on the left hand side in direction of travel).

15.11.5 Collector/drier

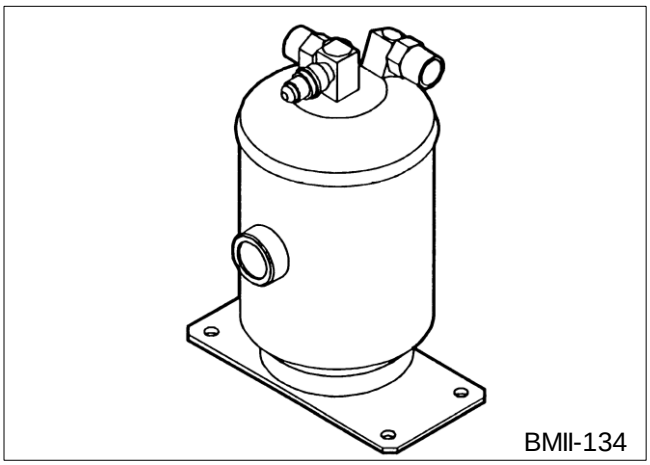


Fig. 319:

Since the refrigerant collector is pressurised, it is subject to the pressurised container regulations during production and testing.

According to this regulation the pressurised tank is classified as test group II in accordance with the permissible overpressure p in bar, the volume l in litres and the pressure product p x l.

According to Section 10 of the Pressurised Vessel Regulations these pressurised containers must be subjected to recurring tests by an expert in accordance with section 32. In this case the recurring tests consist, as a rule, of external inspections of the tank in use. In combination with the inspection the refrigerant collector must be subjected to a visual inspection twice a year. Special attention shall be given to corrosion and mechanical damage. If the container is not in a correct state, for safety reasons it must be replaced to ensure sufficient protection to the user and third parties due to the hazard which may be caused in handling or operating pressurised containers.

Note

The ambient temperature must exceed the temperature set at the thermostat (generally +1° Celsius) for the compressor to switch on.

15.11.6 Checking refrigerant condition and level

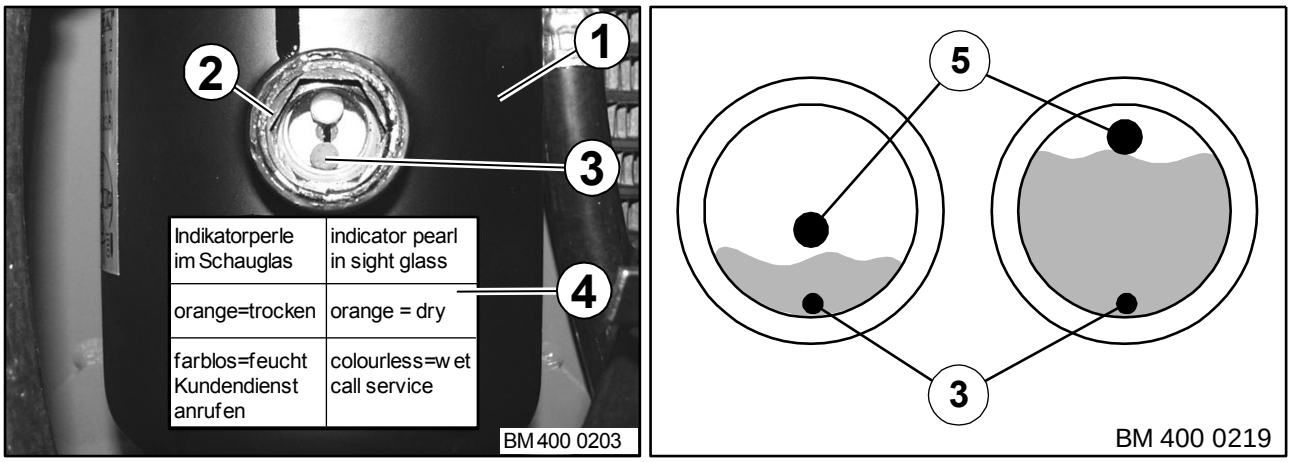


Fig. 320:

Note
The quantity of refrigerant is checked using the white ball float.

Loss of refrigerant through hoses in the air conditioning system is unavoidable. Check the refrigerant level every 200 hours. Check the window (2) of the drier (1) with the engine running and with the air conditioning system switched on (set to highest cooling action).

- If the white float (5) is at the top, the volume of refrigerant is okay.
- If the white float (5) is at the bottom, the refrigerant must be topped up (specialist workshop).

Note
Humidity saturation is checked using the orange indicator pearl.

Moisture in the coolant circuit is collected in the filter desiccator.

- If the indicator pearl (3) is orange, the degree of moisture is okay.
- If the indicator pearl (3) has turned colourless, the collector unit of the drier must be replaced (specialist workshop).

Note
Observe the instructions on the label (4) on the dryer (1).

15.12 Checking the capacitor

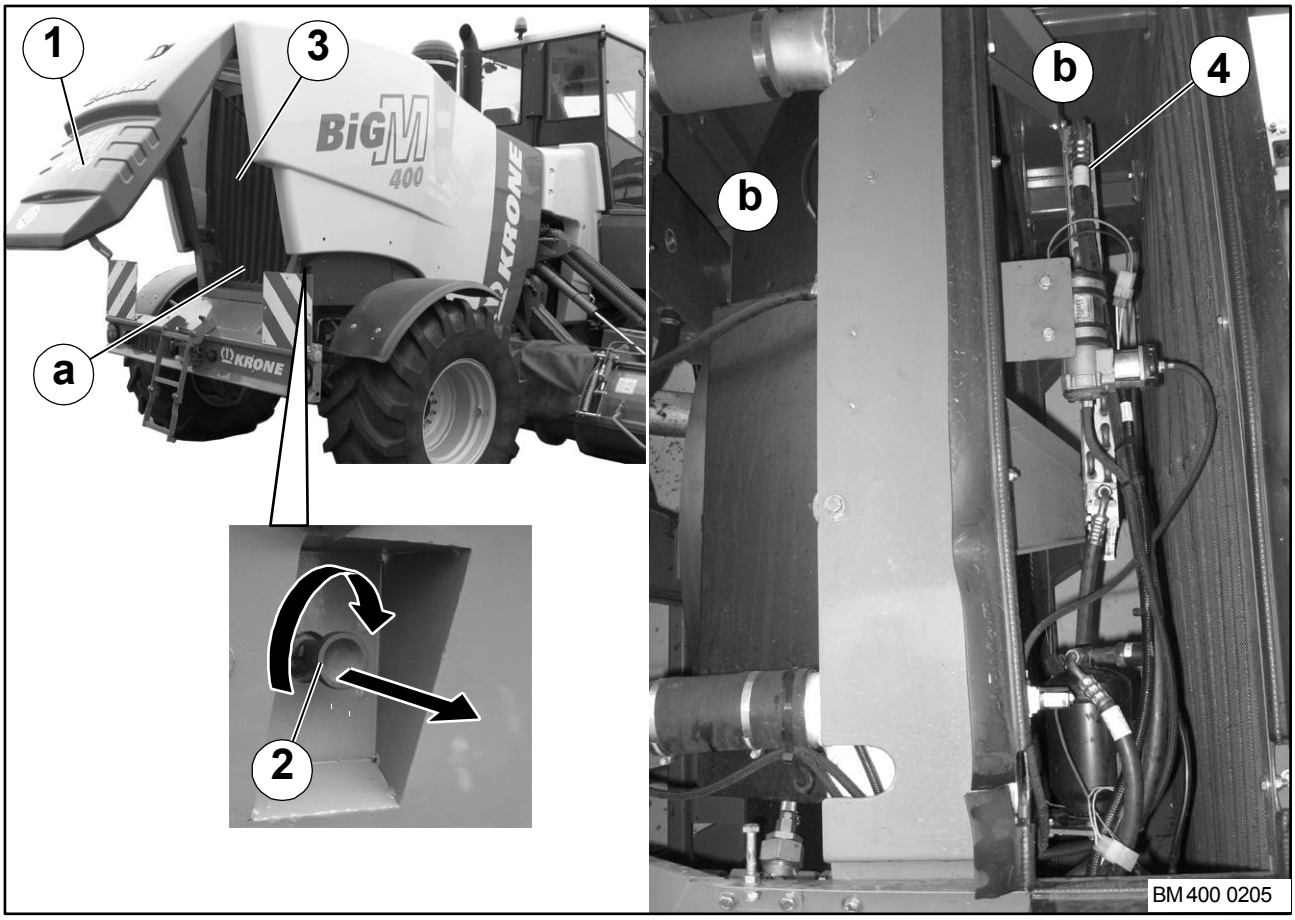


Fig. 321:

Warning!

Unintentional opening of the rear hood

Effect: Injuries or damage to the machine

Make certain before start-up that the rear hood is properly locked.

Keep the capacitor and radiator compartment clean at all times.

To do this:

- Open the rear hood (1) by tightening the lock (2) to the right/left and rotating by about 90 degrees.
- Clean dirt from the area (a) in front of the adjustment plate.
- Clean the adjustment plate (3) with compressed air.
- Open the rear side guard.
- Clean dirt from the radiator compartment (a) in front of the capacitor.
- Clean the condenser block (4) depending on its degree of soiling, but at least once every month.
- Blow through the condenser block with compressed air from the inside to the outside, making sure that the fins are not damaged.
- After cleaning, close the rear hood (1) by tightening the lock (2) to the right/left and rotating by about 90 degrees.

15.13 Belt drives

Danger!

Unexpected actions on the machine

Effect: Danger to life, injuries or damage to the machine.

- **Always make certain that the drive and the engine are switched off before doing any repairs, maintenance or cleaning. Remove the ignition key!**

Caution!

Slipping belt drives

Effect: Danger of fire

- **The build-up of dust, oil and grass inside the engine compartment is combustible and presents an increased fire hazard.**
- **Keep the engine and the engine compartment clean at all times.**
- **Retighten or replace slipping belt drives immediately.**

Note

Check the V-belt tension and condition of all belt drives after the first 10 hours of operation and thereafter every 200 operating hours.

- **Replace damaged or worn V-belts.**

Prerequisite:

- Lower the mowing unit into working position
- Switching off the engine
- Remove the ignition key
- Secure the machine against rolling (parking brake, wheel chocks)

15.13.1 Fan wheel drive

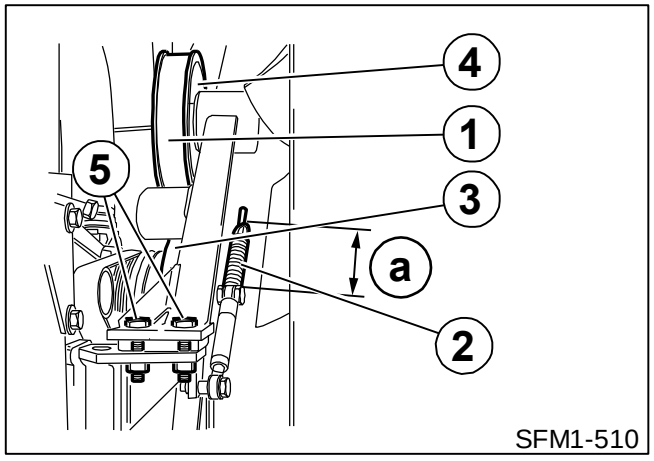


Fig. 322:

Check belt tension

Length of spring under tension a = approx. 200 mm

Correcting the belt tension:

- Increase or reduce the spring tension of the tension spring (2) until distance a = approx. 200 mm is set.

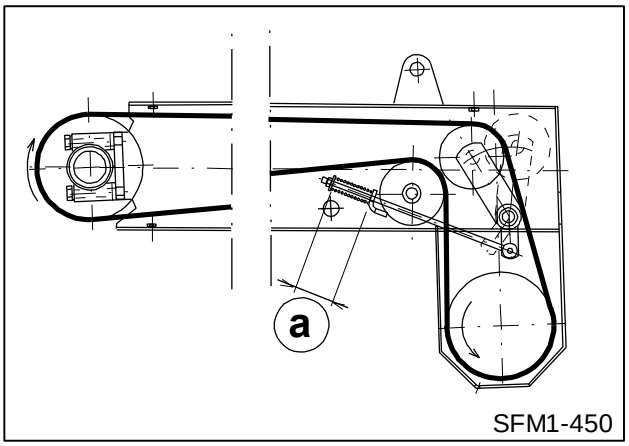
To replace belt (1):

- Relieve the spring (2) in the tension roller (3).
- Remove belt (1).
- The belt pulley (4) must be exactly aligned.
- If necessary, adjust the belt pulleys (4) with the screws (5).
- Set a new belt in place and tension the spring in the tension roller a = 200 mm

Note

Make sure the fan blade is in a central position in the radiator cover.

15.13.2 Outrigger arms



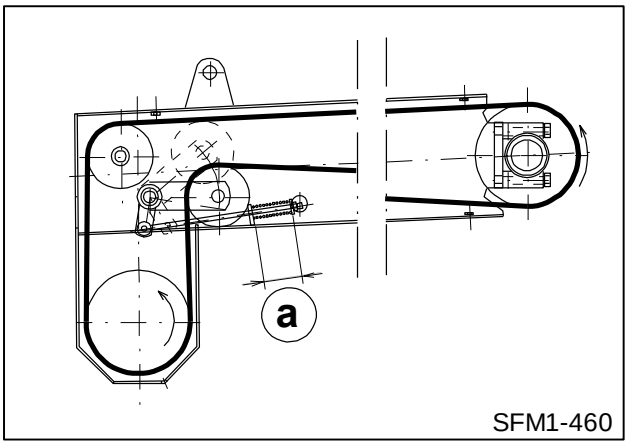


Fig. 323:

Outrigger right / left

Check belt tension

Length of spring under tension a = approx. 90 mm

Correcting the belt tension:

- Increase or reduce the spring tension of the tension spring (2) until distance a= about 90 mm is set.

Note

Tighten the left and right tensioning system only until the distance tube makes contact in the spring. (Do not overstretch!)

Replace the belt on the outrigger.

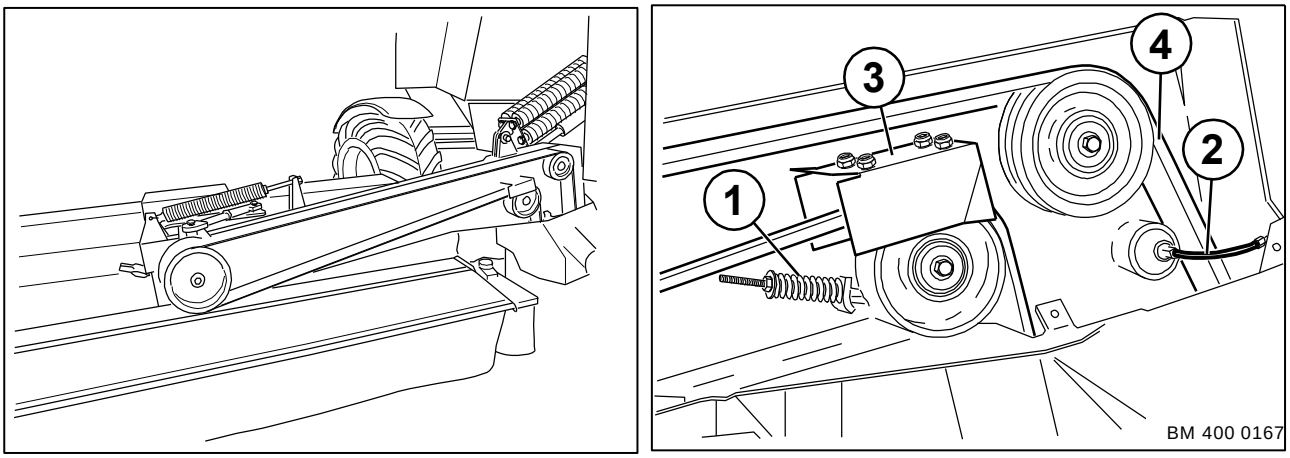


Fig. 324:

- Remove the belt covers.
- Relieve the springs (1) in the tension rollers.

Note
Remove the cover plate (3) on the right side.

- Loosen the lubrication lines (2).
- Replace the belt (4) and check to make certain it is correctly seated.
- Tighten the springs (1) to a length of 90 mm.
- Install the cover plate (3) on the right side.
- Install the belt covers.

15.13.3 Drive of mowing unit

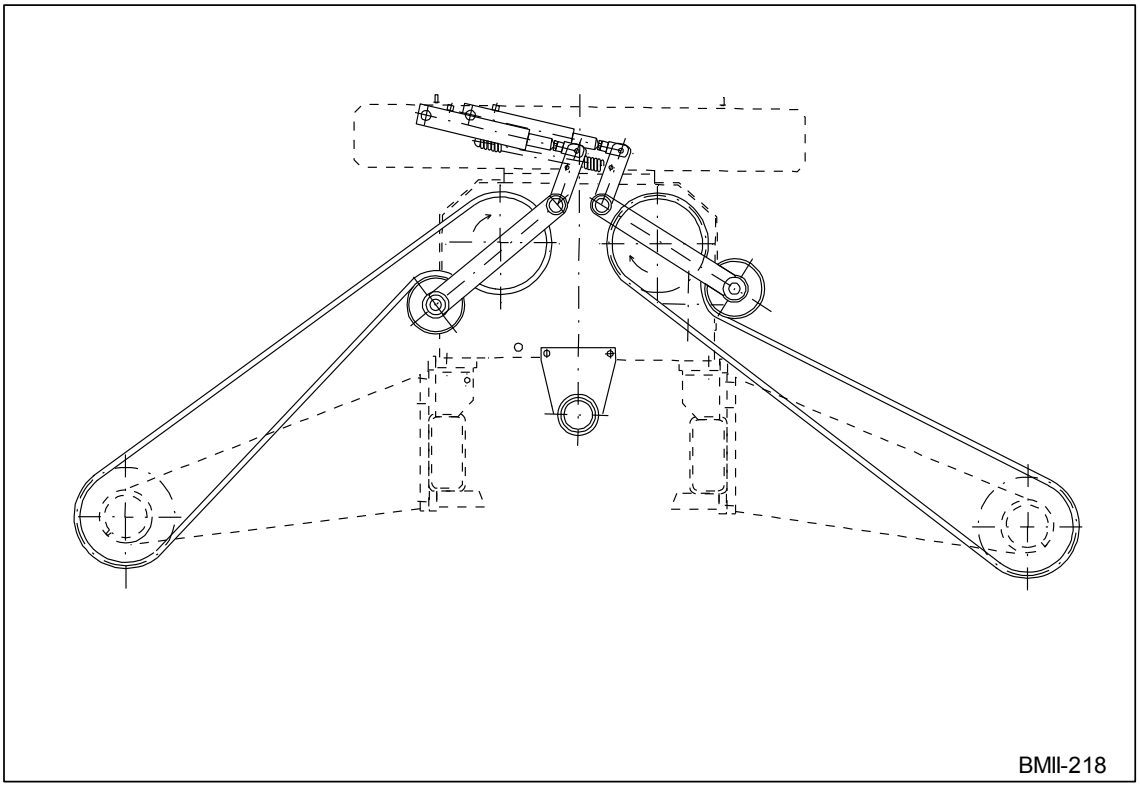


Fig. 325:

- The belt tension is produced using the hydraulic cylinder (pressure 50 bar). Reset the single-acting cylinder using the springs.

Replace the lateral mowing unit V-belt

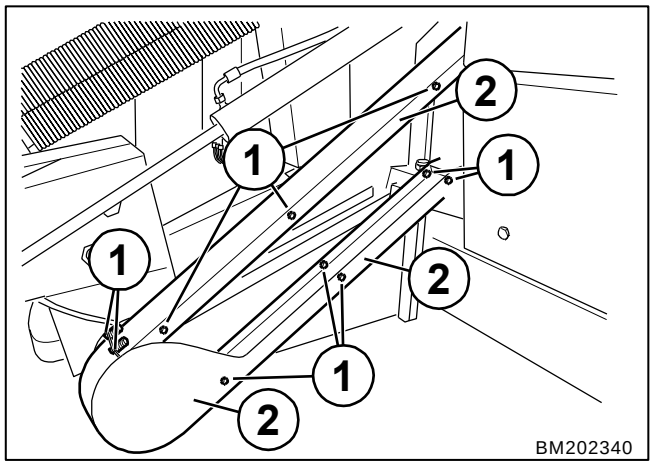


Fig. 326:

- Remove the attachment bolts (1) of the belt covers (2) on both sides.
- Remove the belt covers (2).
- Replace the belt and check to make certain it is correctly seated.
- Install the belt covers (2) again.

15.14 Tyres

Warning!

Tyre fitting incorrect

Effect: Injuries or damage to the machine

- **Fitting tyres requires sufficient knowledge and the availability of proper tools!**
- **If tyres are not correctly fitted, it could explode when pumped up. This can cause serious injury. If you do not have sufficient experience of fitting tyres, have tyres fitted by the KRONE dealer or a qualified tyre specialist.**
- **When fitting tyres on the wheel rims, the maximum pressure given by the tyre manufacturer must not be exceeded. The tyre or even the wheel rim could explode and/or burst.**
- **If the tyre heels do not fit properly when the maximum permitted pressure is reached, let out the air, align tyres, lubricate the tyre heels and pump up the tyre again.**
- **Detailed information about how to fit tyres onto agricultural machinery can be obtained from the tyre manufacturers.**

15.14.1 Checking and maintaining tyres

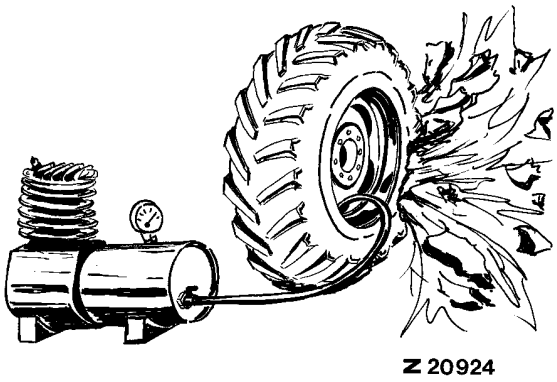


Fig. 327:

Check the tyres for damage and air pressure every day as the service life of tyres depends on the air pressure.

- Repair any cuts or tears in the tyres as soon as possible or change the tyres.
- Do not expose tyres to oil, grease, fuel, or chemicals; nor should you let them stand in the sunlight for long periods.
- Drive carefully; avoid driving over sharp stones or edges.
- Use a precisely working tyre gauge to check the tyre pressure at least once a week (see chapter entitled "Technical Data").

Note

Never operate the machine at the tyre pressure usual for transport of the tyres. Keep the valve caps fitted on the valves to keep dirt out. Check the tyre pressure frequently!

15.14.2 Wheel mounting

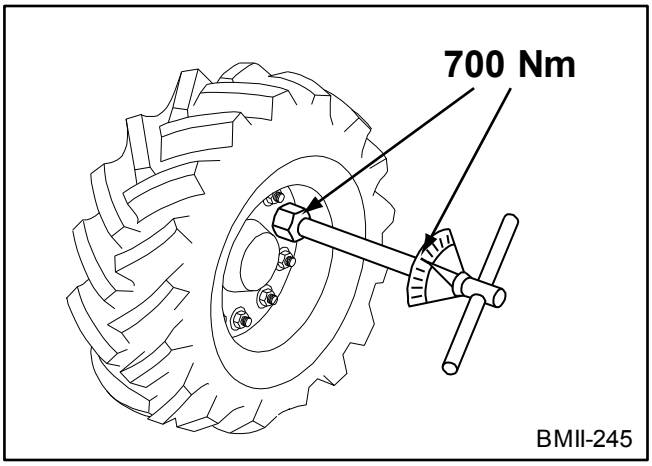


Fig. 328:

Tighten the wheel nuts after the first and then every 20 to 25 operating hours to a torque of 700 Nm.

15.14.3 Retightening the Attachment Bolts on the Outrigger

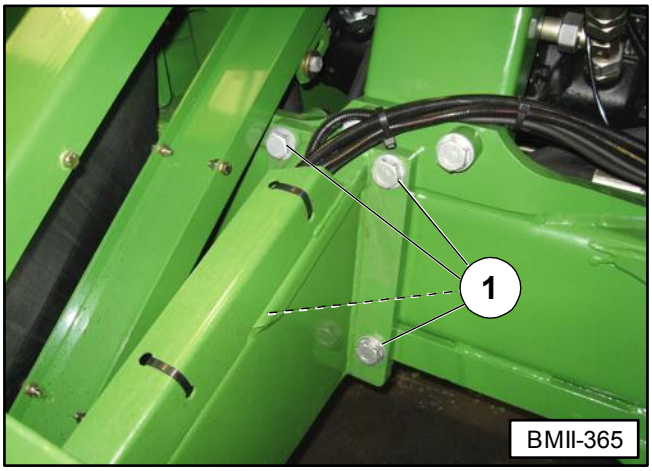


Fig. 329:

- Retighten (annually) the four fastening bolts (1) on the frame arms to a tightening torque of 640 Nm.

16 Maintenance – lubrication chart

16.1 Lubricating the PTO shaft

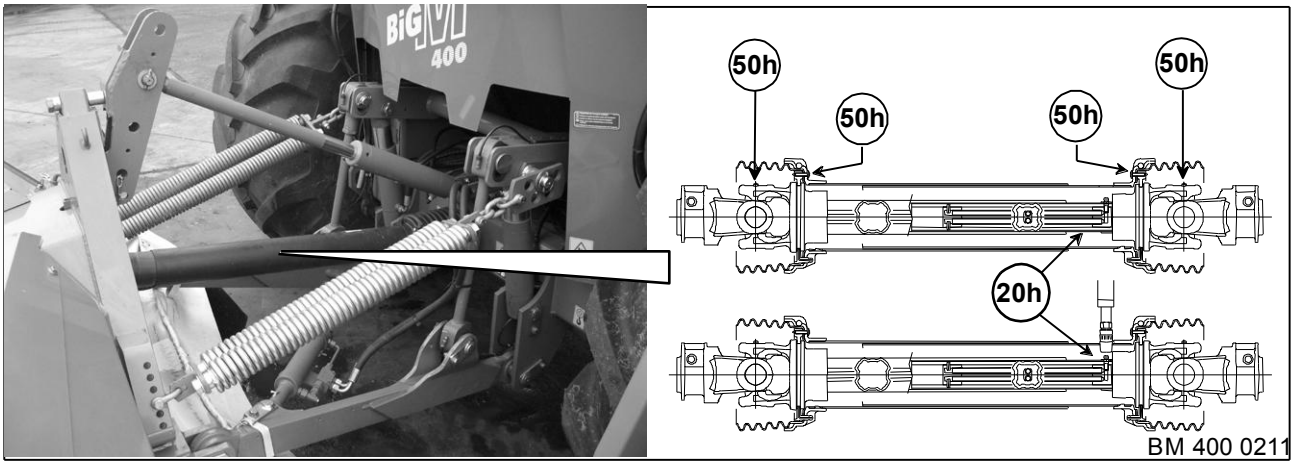


Fig. 330:

All other grease nipples on the PTO shafts must be lubricated as shown in the illustration.

16.2 Lubricating the double joints on the main gearbox

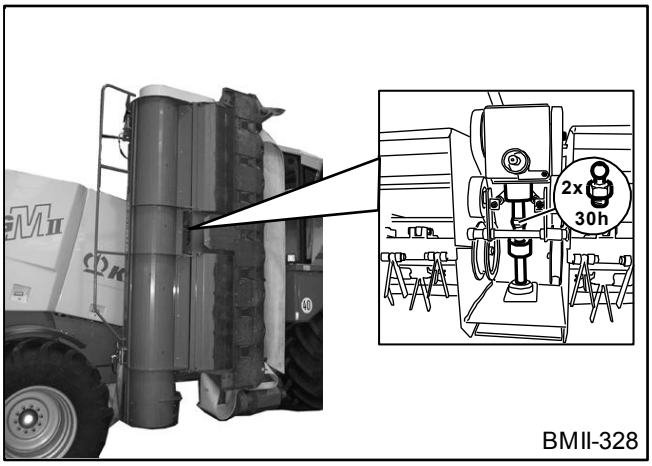


Fig. 331:

All other grease nipples on the double joints must be lubricated as shown in the illustration to the side.

Note

The lateral mowing units must be moved into the transport position first when using hydraulic auger hoods.

16.3 Lubrication Chart

(CV)

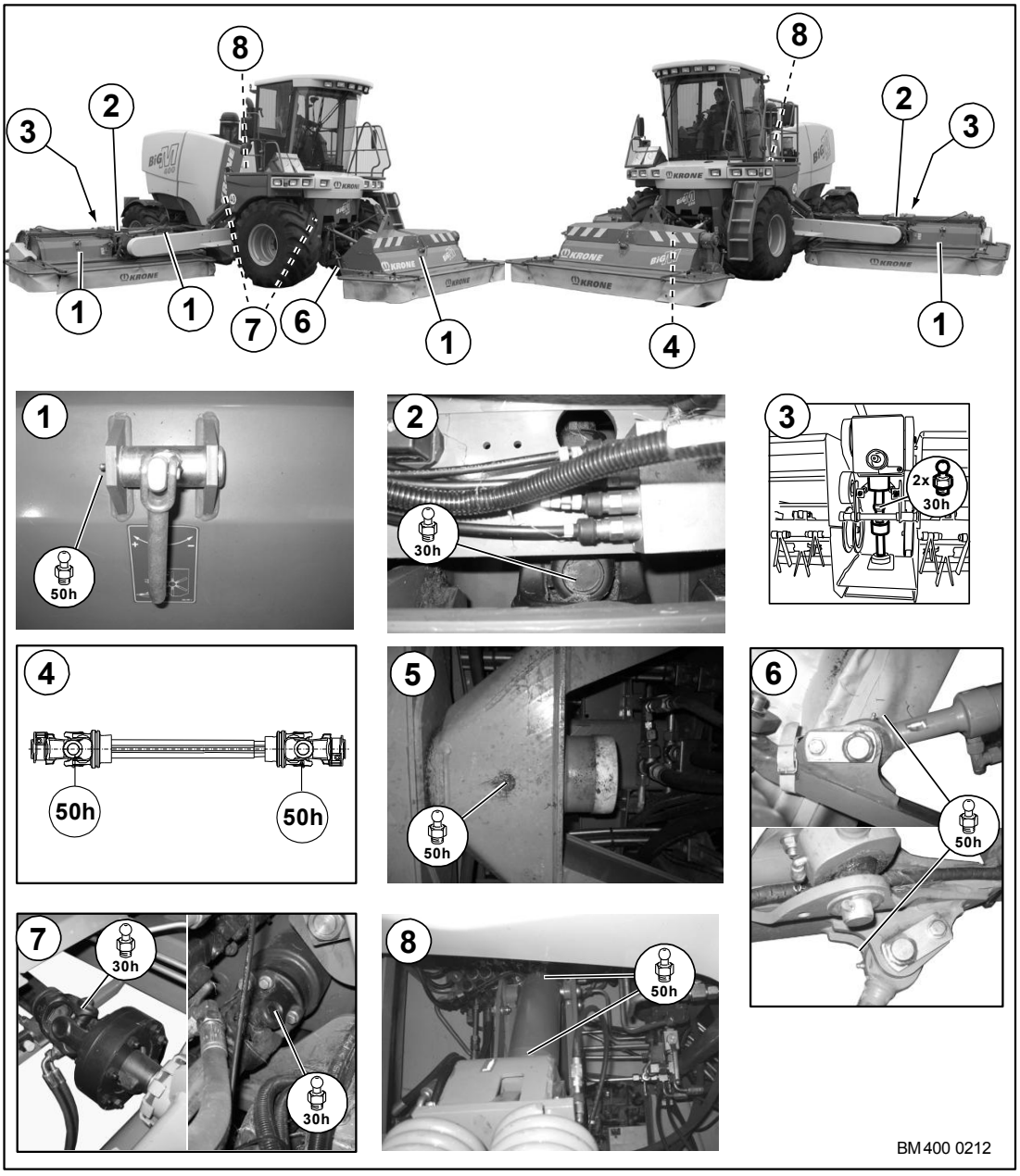


Fig. 332:

1. Crank for conditioner plate
2. Double joint (universal joint bracket)
3. Double joint (main gearbox)
4. Horizontal PTO shaft (front mowing unit)
5. Full floating axle
6. Front outrigger suspension arm
7. PTO shaft (transfer gearbox/front mowing unit)
8. Spring compensation cylinder

17 Maintenance – electrical system

Danger!

Unexpected actions on the machine

Effect: Danger to life, injuries or damage to the machine.

- **Always make certain that the drive and the engine are switched off before doing any repairs, maintenance or cleaning. Remove the ignition key!**
- **Switch off the engine and remove the ignition key.**
- **Secure the machine against accidental start-up and against rolling!**
- **During repair work (welding) always switch off the engine, set main battery switch (1) to pos. II (circuit interrupted) and remove the cable plug from the MR2 control unit on the engine!**

17.1 Electrical equipment - technical data

Generator power	14V /150 A
Number of batteries	2
Battery voltage -	12V
Battery capacity	(2x) 135 Ah

17.2 Battery

Danger!

Battery gases are highly explosive

Effect: Danger to life, injuries or damage to the machine.

- **Batteries develop a highly explosive electrolytic gas. Do not allow sparks or naked flames anywhere near the battery.**
- **During repair work (welding work) on the electrical system or engine, always switch the engine off.**
- **Interrupt the electrical power circuit with the main battery switch.**
- **Disconnect the cable plug (2) from the MR2 control unit on the engine!**
- **Note the correct polarity when disconnecting and connecting the battery.**
- **When jump-starting the battery, make certain that only a voltage of 12 V is connected to each battery!**

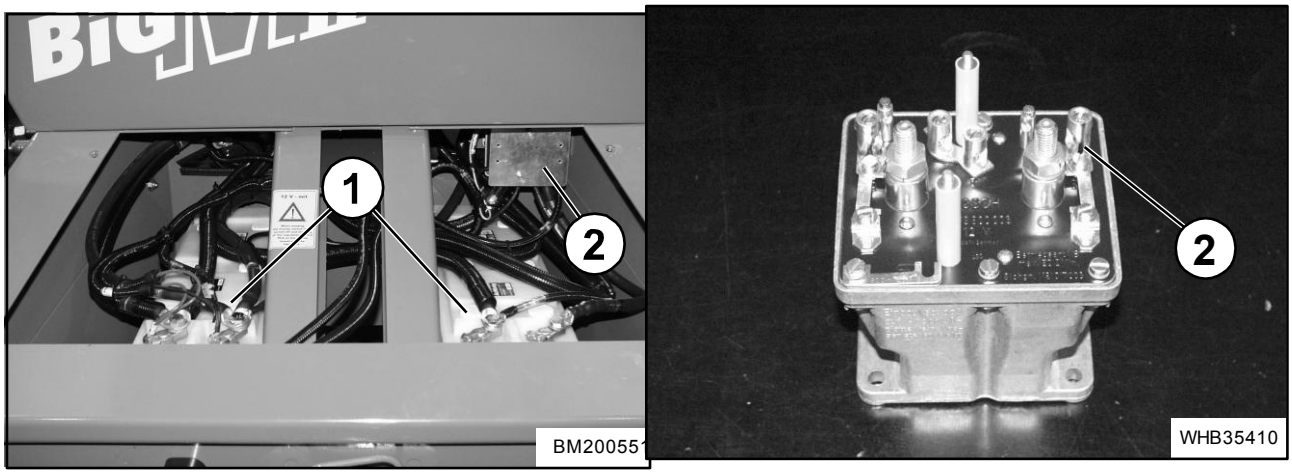


Fig. 333:

The Big M II is equipped with two batteries (1) of 12 V (135 Ah) each, which are connected in series (24 V) for starting.

A switching relay (2) is used to switch.

The operating voltage is only 12 V!

Note

Keep the battery clean of dust and chaff.

17.2.1 Main battery switch

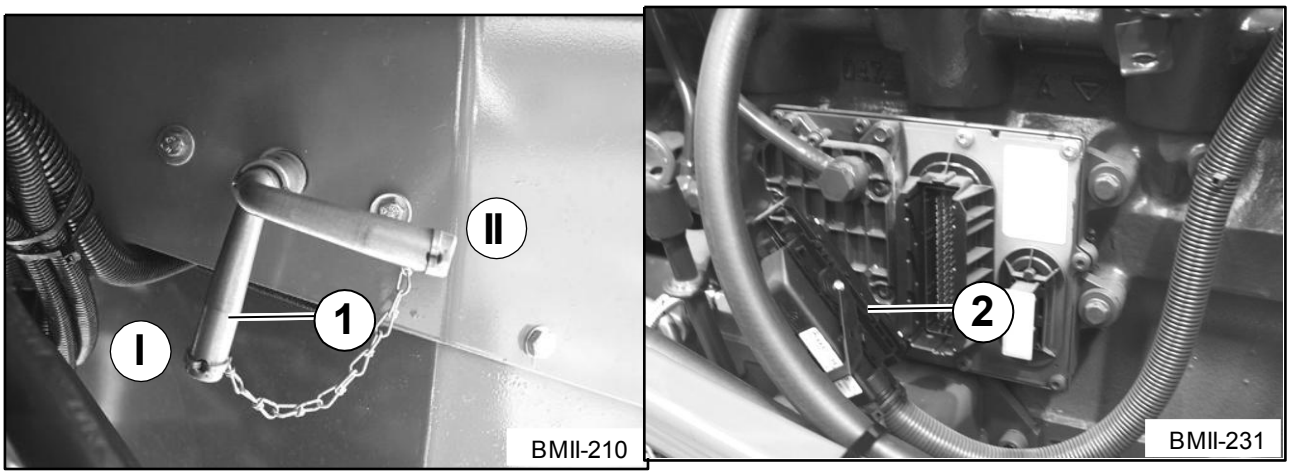


Fig. 334:

The main battery switch is used to turn on or interrupt the machine ’s power supply.

The main battery switch is on the left rear side as seen in direction of travel.

I – Electrical power circuit turned on

II – Electrical power circuit interrupted

Note

Ignition to level 1 or 2

Effect: Battery discharges

- **The battery is discharging even when the main battery switch interrupts the electrical power circuit. (Position II)).**
- **Before extended times with no usage, disconnect the electrical power circuit with the main battery switch (position II).**
- **Disconnect cables from battery terminal for winter storage (you may wish to charge or discharge the battery).**

17.2.2 Charging Batteries

Danger!

Battery gases, battery acid

Effect: Danger to life, injuries or damage to the machine.

- **Remove the plastic covers of the battery in order to prevent highly explosive gas from gathering.**
- **Battery acid inside the batteries causes burns on contact with skin and eyes.**
- **Avoid contact with skin, eyes, or clothing.**
- **Wear suitable protective clothing, since battery acid will corrode its way through normal clothing, safety boots and safety goggles.**
- **Rinse away splashed acid immediately with clear water and if appropriate seek medical attention.**

17.2.3 Quick charge

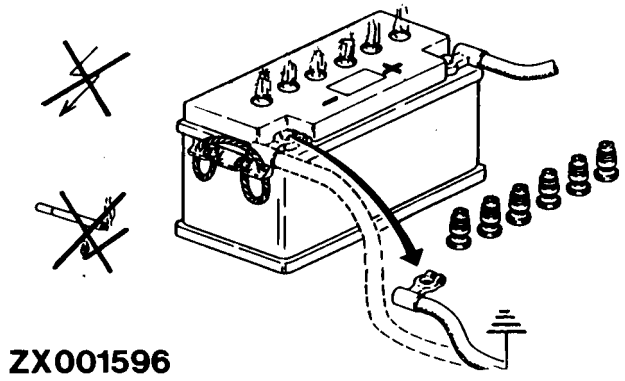


Fig. 335:

When quick charging the battery, disconnect the battery negative cable and open all battery cells to avoid damage to the electrical system.

Removing the battery:

Always disconnect the earth cable first and then the positive cable before removing the battery.

17.2.4 Cleaning the battery

- Wipe the battery clean as and when necessary.
- Use a brush to remove any oxidation on the pole terminals.
- Use pole grease on the battery poles and the pole terminals.
- Keep the venting holes of the plugs open.

17.2.5 Check battery

Danger!

Battery acids

Effect: Chemical burns

- **Battery acid inside the batteries causes burns on contact with skin and eyes.**
- **Avoid contact with skin, eyes, or clothing.**
- **Wear suitable protective clothing, since battery acid will corrode its way through normal clothing, safety boots and safety goggles.**
- **Rinse away splashed acid immediately with clear water and if appropriate seek medical attention.**
- **If you top up the distilled water during the winter, allow the engine to run for about 30 minutes to ensure a better mixture of water and acid.**
- **Use distilled water only.**

17.2.6 Check acid level

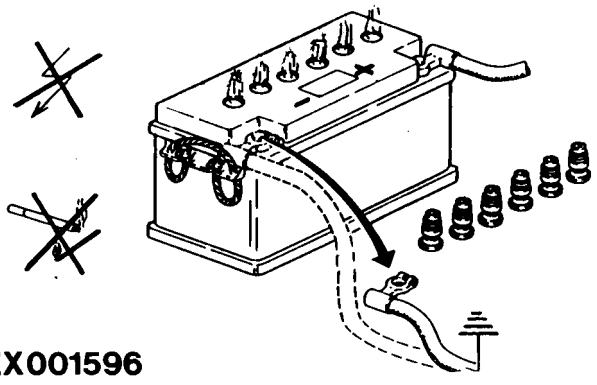


Fig. 336:

Check the acid level every 250 operating hours.

- The acid level should be at the mark above the upper plate edge.

Note

Use only properly filled and maintained batteries.

Coat the battery terminals with acid protection grease (terminal grease).

17.2.7 Measuring Acid Density

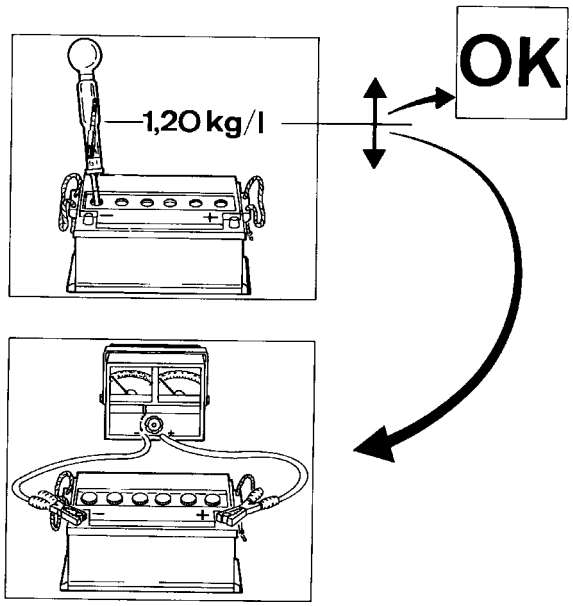


Fig. 337:

- Use an acid tester to measure the acid density of each battery cell.

A fully charged battery should have an acid density of 1.28 in normal climatic conditions.

- Recharge the battery, if the density drops below 1.20.

17.3 Fitting the batteries and connecting the poles correctly

Caution!

Installation of Batteries

Effect: Damages to the machine

- **Always connect batteries with the correct polarity**

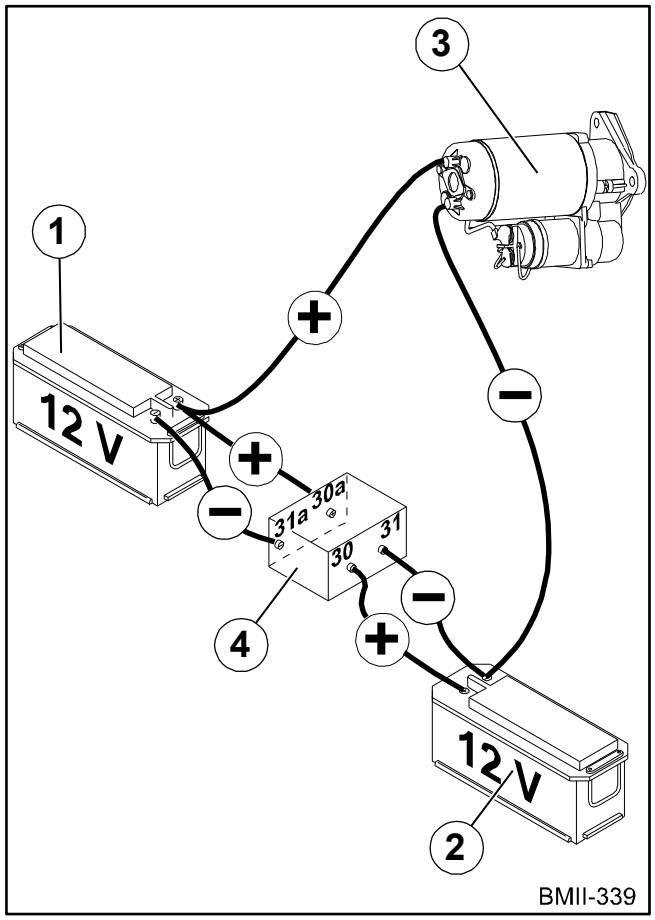


Fig. 338:

To do this:

- Connect the positive cable from the starter (3) to the positive pole of the battery (1).
- Connect the positive cable of the battery (1) with the positive pole (30a) of the battery changeover relay (4).
- Connect the negative cable of the battery (1) with the negative pole (31a) of the battery changeover relay (4).
- Connect the negative cable from the starter (3) to the negative pole of the battery (2).
- Connect the negative cable of the battery (2) with the negative pole (31) of the battery changeover relay (4).
- Connect the positive cable of the battery (2) with the positive pole (30) of the battery changeover relay (4).

17.4 Three-phase generator

Caution!

Working on the electrical system

Effect: Damages to the machine

- **When working on the electrical system, remove the positive lines on the batteries.**
- **Interrupt the electrical power circuit with the main battery switch.**
- **The cable contacts of the positive cable are to be protected against inadvertent contact with the battery contacts.**

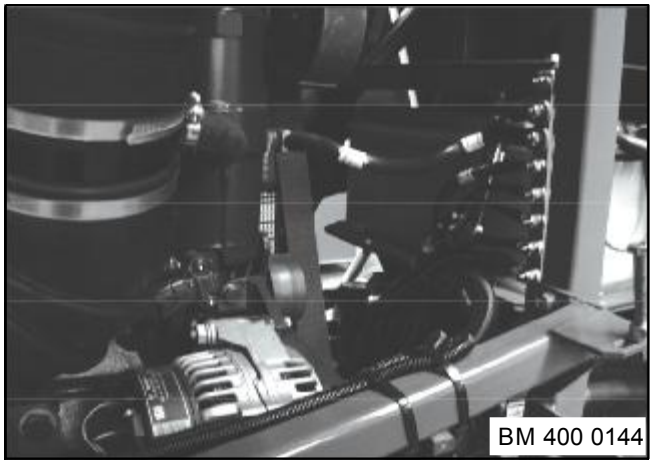


Fig. 339:

Note

For further information please refer to the manufacturer's operating instructions included with delivery (chapter "Fitting and Dismantling V-Ribs")

Have the three-phase generator checked once a year at a specialist workshop.

17.5 Starter

Caution!

Working on the electrical system

Effect: Damages to the machine

- **When working on the electrical system, remove the positive lines on the batteries.**
- **Interrupt the electrical power circuit with the main battery switch.**
- **The cable contacts of the positive cable are to be protected against inadvertent contact with the battery contacts.**

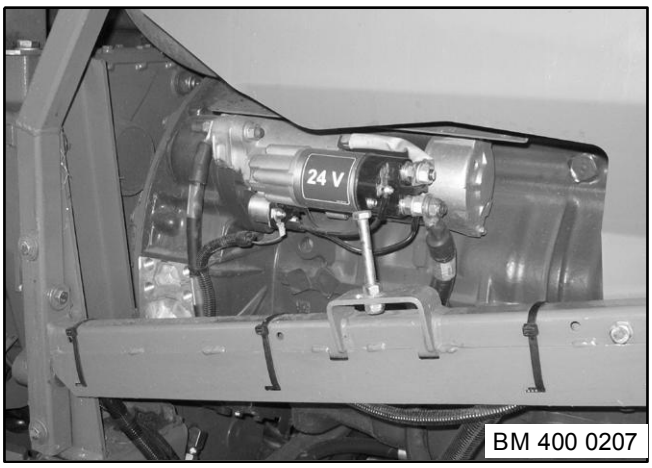


Fig. 340:

Note

If the electrical power circuit is interrupted by the main battery switch, 12 V is still present on the starter.

If the starter fails or does not work properly, investigate the cause of the problem. If the suggestions listed below do not remove the damage, please seek the advice of your KRONE dealer. Have the starter checked thoroughly once a year at a specialist workshop.

Loose, soiled or corroded cable connections:

- Clean the cable connections on the starter and tighten the connections.
- Clean the earth cable on the engine and tighten the connection to the engine.

Battery performance too low:

- Check the electrolyte as well as acid density, and recharge the battery, if and when necessary.

Discharged battery:

- Charge the battery.

Use of a wrong engine oil viscosity:

- **Always use the right engine oil according to the specification.**

Starter safety relay is defective:

- **Replace the relay.**

17.6 Control units and fuses

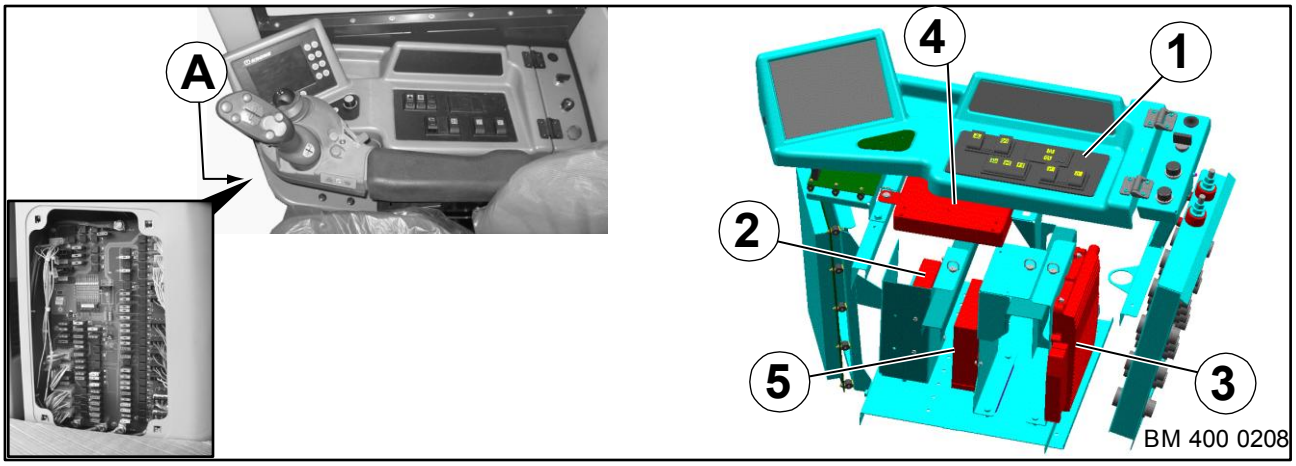


Fig. 341:

Note

Have work on the electronic system carried out by KRONE after-sales service or KRONE dealer only!

The control units listed below are located behind the cover (1) of the operating panel in the driver's cab.

1. CU control unit console
2. ADM engine control
3. SmartDrive (travelling gear)
4. KMC1 Krone machine controller
5. DIOM output module

Designations of fuses, relays and LEDs for the control units listed above are located on the console circuit board. The console circuit board is located behind the cover (A) of the operating panel in the driver's cab. For an overview of the console circuit board, see the chapter entitled "Console Circuit Board"

17.6.1 MR2 engine control

Fig. 342:

The MR2 engine control (1) is located at the front right on the engine in direction of travel. MR2 engine control (1). For more information, please refer to the operating instructions of the engine manufacturer. Designations of fuses, relays and LEDs for the MR2 engine control are located on the console circuit board.

The console circuit board is located behind the cover (1) of the operating panel in the driver's cab. For an overview of the console circuit board, see the chapter entitled "Console Circuit Board"

17.6.2 Cab relay PCB

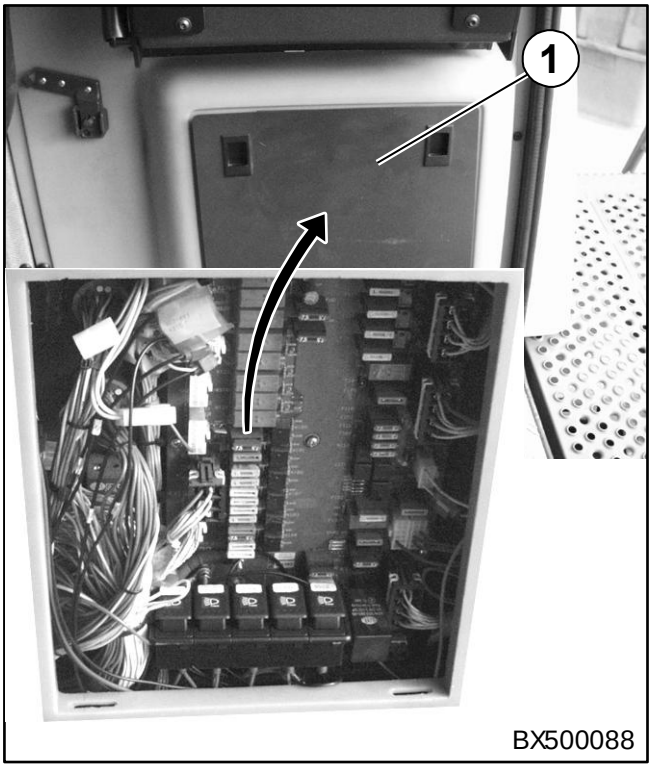


Fig. 343:

Designations of fuses, relays and LEDs for the cab are located on the cab relay circuit board. The cab relay circuit board is located behind the cover (1) on the rear wall of the cab. For an overview of the console circuit board, see the chapter entitled "Cab Circuit Board"

17.6.2.1 Console Circuit Board

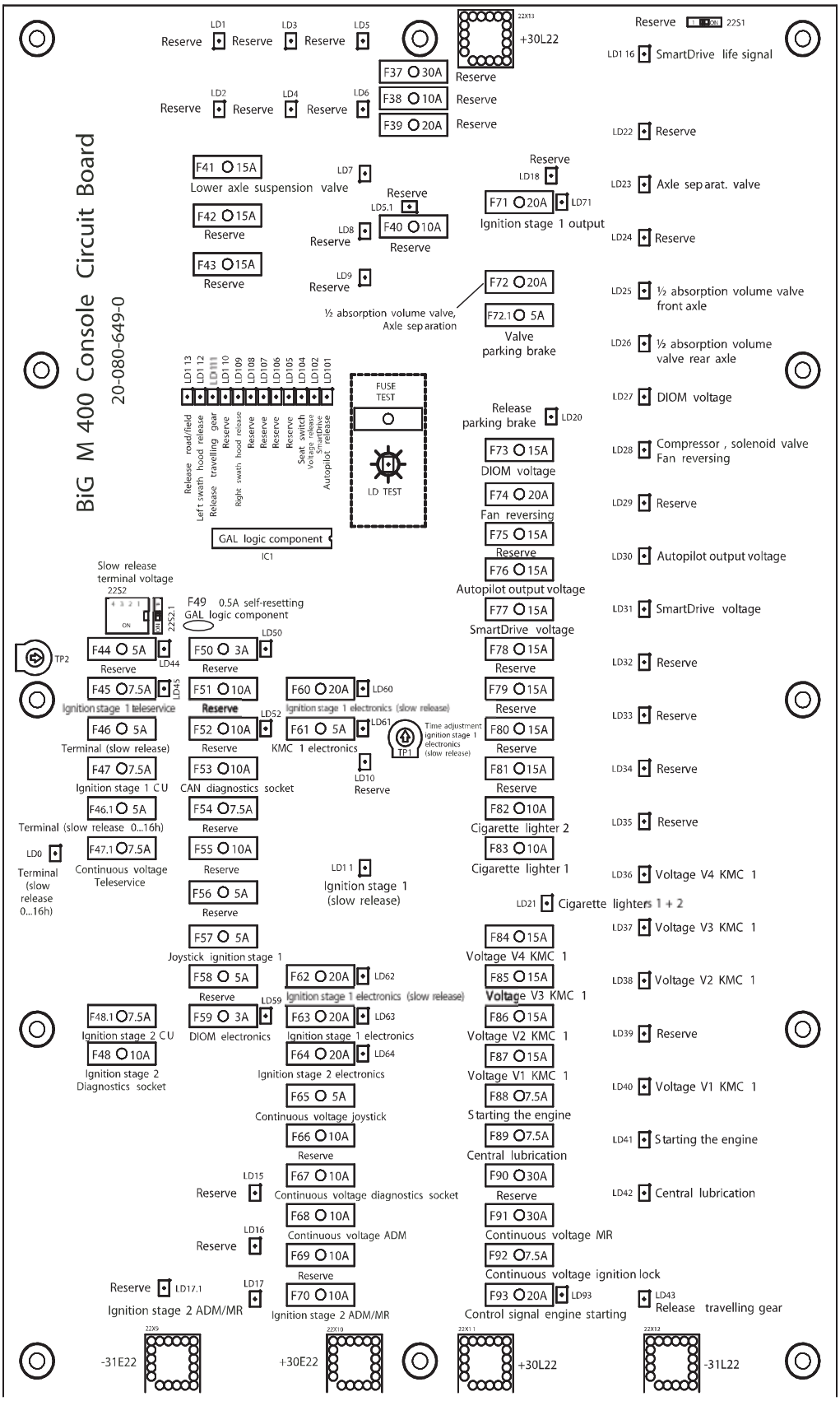


Fig. 344:

17.7 Console Circuit Board

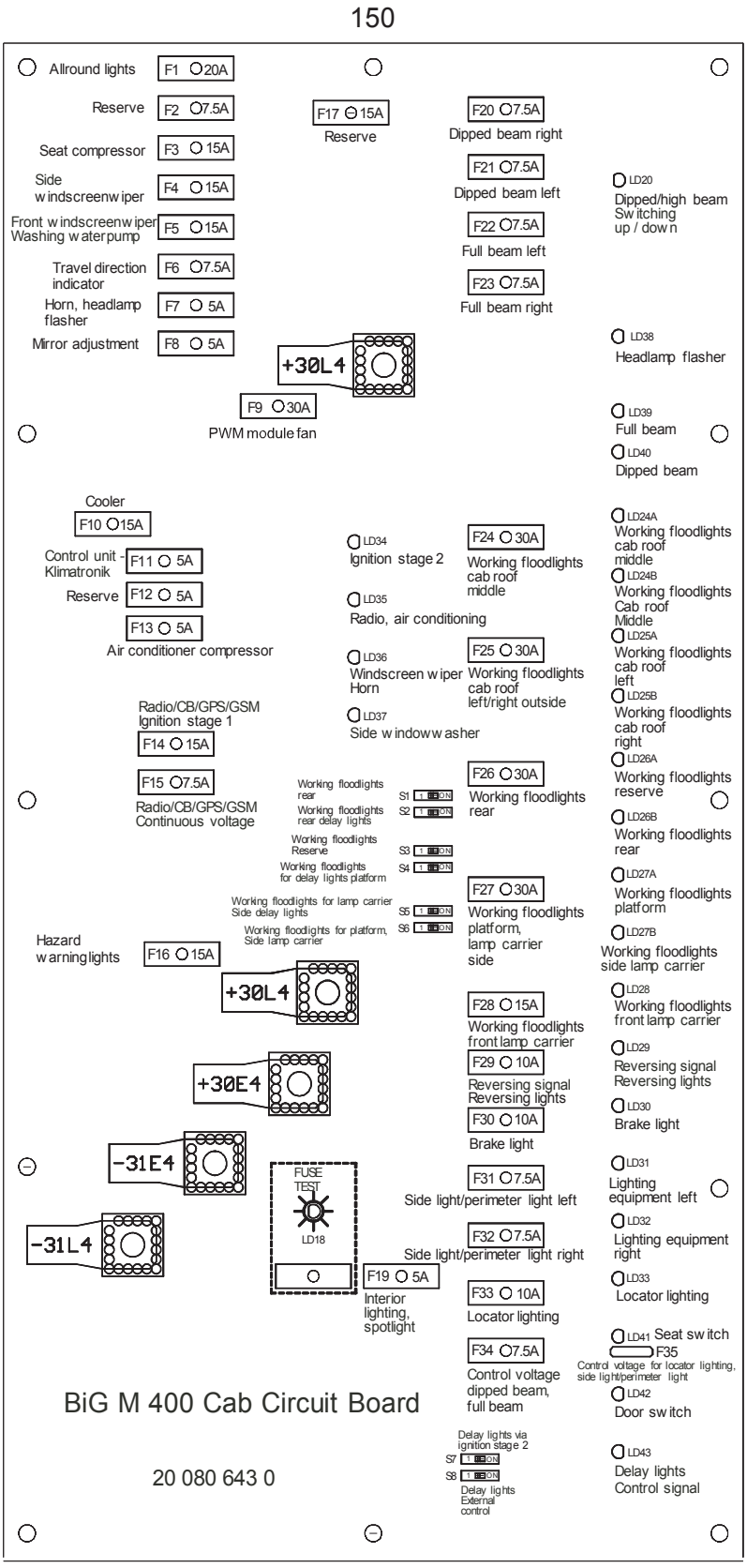


Fig. 345:

17.7.1 Krone Machine Controller circuit board (KMC1)

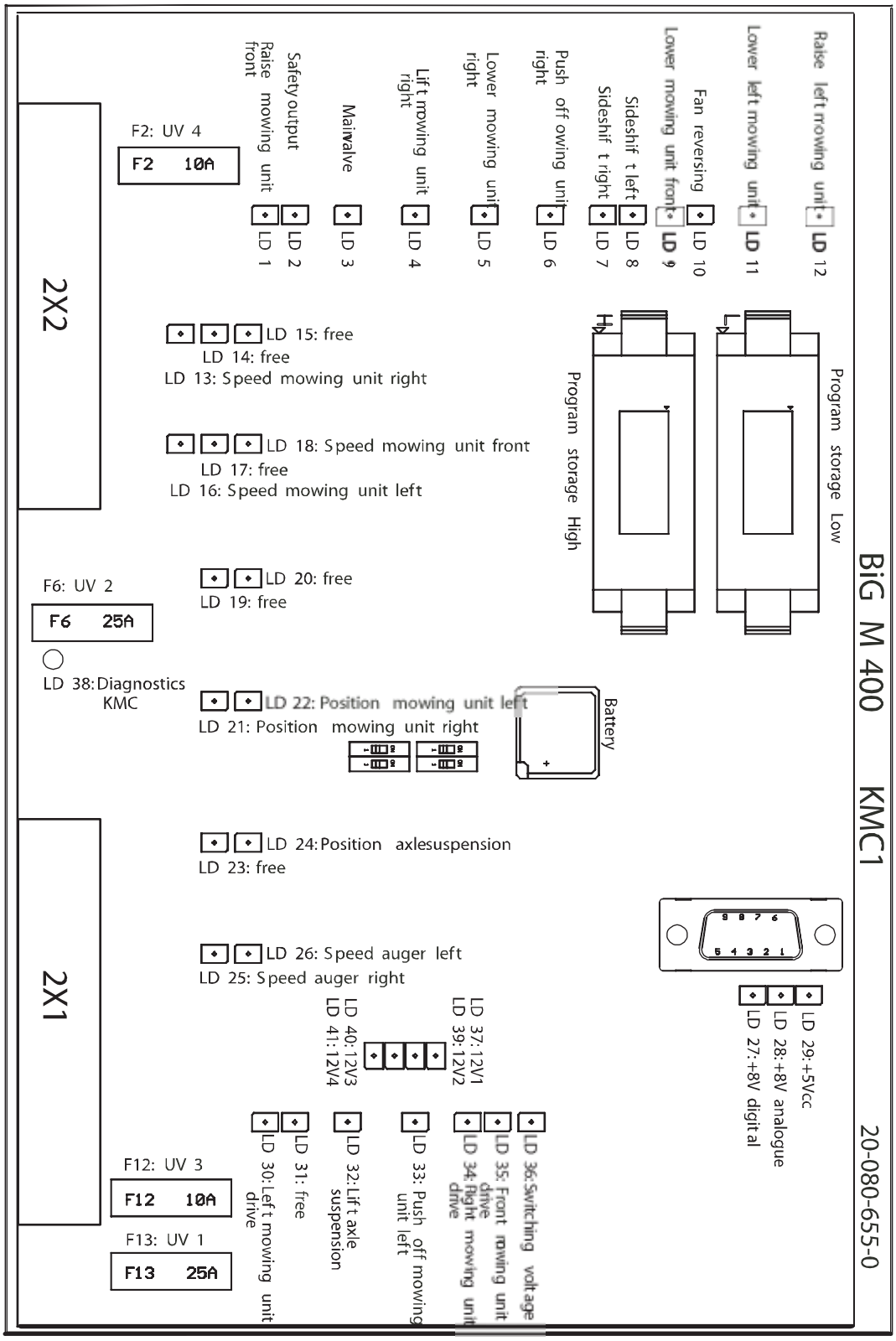

BiG M 400 KMC1
20-080-655-0
2X2
2X1
F2: UV 4
F2 10A
F6: UV 2
F6 25A
F12: UV 3
F12 10A
F13: UV 1
F13 25A
Raise left mowing unit LD 12
Lower left mowing unit LD 11
Fan reversing LD 10
Lower mowing unit front LD 9
Sideshift left LD 8
Sideshift right LD 7
Push off owing unit right LD 6
Lower mowing unit right LD 5
Lift mowing unit right LD 4
Mainvalve LD 3
Safety output LD 2
Raise mowing unit front LD 1
LD 15: free
LD 14: free
LD 13: Speed mowing unit right
LD 18: Speed mowing unit front
LD 17: free
LD 16: Speed mowing unit left
LD 20: free
LD 19: free
LD 38: Diagnostics KMC
LD 22: Position mowing unit left
LD 21: Position mowing unit right
LD 24: Position axlesuspension
LD 23: free
LD 26: Speed auger left
LD 25: Speed auger right
Program storage High
Program storage Low
Battery
LD 29: +5Vcc
LD 28: +8V analogue
LD 27: +8V digital
LD 37: 12V1
LD 39: 12V2
LD 40: 12V3
LD 41: 12V4
LD 36: Switching voltage
LD 35: Front mowing unit drive
LD 34: Right mowing unit drive
LD 33: Push off mowing unit left
LD 32: Lift axle suspension
LD 31: free
LD 30: Left mowing unit drive

Fig. 346:

18 Maintenance – Central Lubrication

18.1 Lubricant fill

Fig. 347:

Hydraulic-type grease nipple

The lubricant is filled through the hydraulic-type lubricating nipple DIN 71412-AM10x1 by means of a commercially available grease gun.

1. Hydraulic-type grease nipple
2. Mounting connection

The hydraulic-type lubricating nipple can be screwed to position 2. As an alternative, connection 2 can be used to mount potential lubricant return systems.

18.2 Fill coupling (fluid grease)

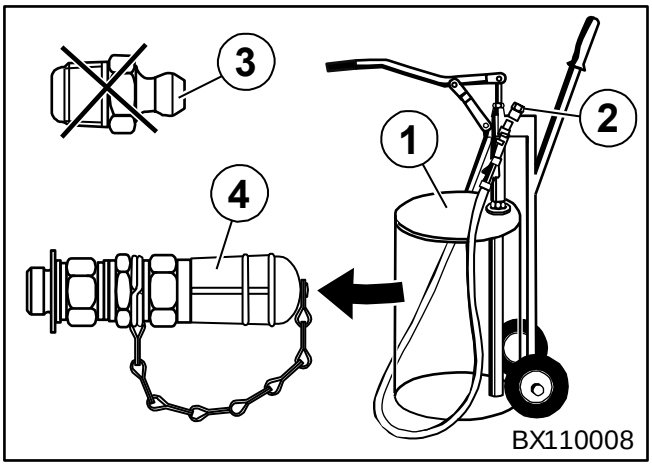


Fig. 348:

For spare parts, please refer to Vogel brochure 1-9430, page 51.

- Remove the lubrication nipple (3) and replace by filler neck 995-000-705 (4).
- The coupling box 995-001-500 (2) must be fitted to the filling pump (1).

Filling cylinder

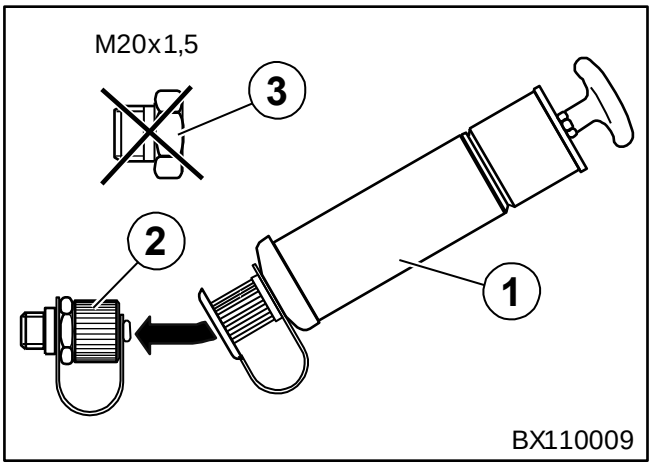


Fig. 349:

For spare parts, please refer to Vogel brochure 1-9430, page 15.

- Remove the M20x1.5 closure screw (3) and replace by filler socket 169-000-170 (2).
- For filling remove the protective cap on the socket (2) and the filling cylinder 169-000-171 (1).

Hinged lid

Fig. 350:

For the KFG3-5, KFG5, KFG3-5 and KFGS5-5 series, a lubricant filling method has been provided through a special hinged lid as an optional feature.

Note

Add only clean lubricant using a suitable tool! Dirty lubricants result in serious system faults.

18.3 Lubricant

To ensure continuous problem-free operation of the central lubrication system, we recommend using the following greases that we have tested. (Greases with sodium soap must not be used in either the on-road or off-road area because they are soluble in water.)

Note

To ensure the system works properly, be careful no impurities enter the system when refilling lubricant. Dirt will cause malfunctions in the central lubrication system and will damage or destroy parts an friction points.

Grease can be changed from conventional grease to bio-degradable greases (and vice-versa) for the products listed here without resulting disadvantage.

Standard commercial greases or greases recommended by the manufacturer of the vehicle or grease should be used as **lubricants** . Greases should still exhibit adequate suction and flowing behaviour at –25 °C (max. flow pressure 700 mb).

They must not have a tendency to bleed out, since this can result in blockages during extended operation.

MoS2 greases (up to 5 % molybdenum disulphide) can be distributed and pumped with VOGEL progressive pumps.

18.3.1 Grease types, NLGIClass 2

Manufacturer	Type designation	With soap	Minimum pumping temperature [°C]
AGIP	Autol Top 2000	Spec. Ca	–10
ARAL	Long-term grease H	Li	–25
BECHEM	High–Lub L4742	Li	–20
BP	Energrease LS EP 9346	Li	–25
	Energrease LS-EP2	Li	–20
CASTROL	Spheerol EP L2	Li	–20
ESSO	Exxon multi-purpose grease	Li	–20
ELF	ELF Multi 2	Li	–20
FINA	EP multi-purpose grease	Li	–20
FUCHS	LZR 2	Li	–25
KROON OIL	Lithep Grease	Li	–10
MOBIL	Mobilux EP 2	Li	–15
Mobilgrease	MB 2	Li	–20
MOGUL	LV 1 EP	Li	–25
ÖMV	ÖMV Signum M283	Li/Ca	–25
OPTIMOL	Olit EP 2	Li	–25
SHELL	Retinax EP L2	Li	–20
TEXACO	Multifak EP2	Li	–15
TOTAL	Multis EP2	Li	–20
Zeller & Gmelin	Divinol multi-purpose grease 2	Li	–20
Lubrication greases with fast bio-degradable times			
ARAL	BAB EP 2	Li/Ca	–20
AVIA	Syntogrease	Li	–25
BECHEM	UWS VE 42	Li/Ca	–25
DEA	Dolon E EP2	Li/Ca	–20
FINA	Biolical EP S2	Li/Ca	–25
FUCHS	Plantogel 0120S	Li	–25
LUBRITECH	Stabyl Eco EP2	Li/Ca	–20
ÖMV	ÖMV ecodur EP2	Ca	–25
TEXACO	Starfak 2	Ca	–20
Zeller & Gmelin	Divinol E2	Li	–25

18.4 Checking the fill level

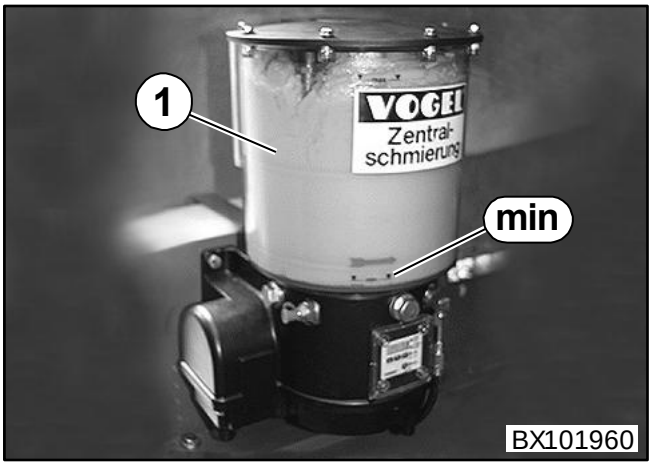


Fig. 351:

Visual

The transparent lubricant tank permits a visual inspection of the fill. For safety reason, this inspection should take place in regular intervals.

Note

If the tank level has dropped to below the "min." mark, the entire system must be deaerated.

Switching conditions for central lubrication

- Turn on the ignition (ignition key position II)
- Move release switch for road/field to position II (field mode).

To reprogram the central lubrication system (lubrication interval times) and start central lubrication manually, the following conditions must be met:

- Turn on the ignition (ignition key position II)
- Move release switch for road/field to position II (field mode).

Deaerating the system

- Dismount the main pipes on the unit.
- Pump until bubble-free lubricant penetrates from the screw top.
- Mount the main pipes again.
- Dismount the main pipe on the main distributor. Pump until there is no more air in the pipe. Mount the main pipe again.
- Dismount the side pipe on the main distributor.
- Pump until bubble-free lubricant penetrates from all connections of the main distributor. Mount the side pipes again.
- Subsequently deaerate the side lines, side distributors, lubricating pipes and lubrication points and check for correct function.

18.5 Changing the times of the lubricating interval

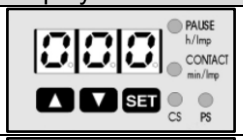
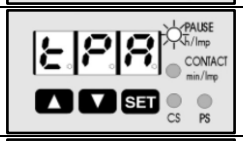
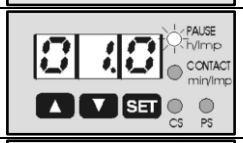
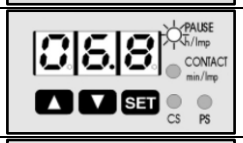
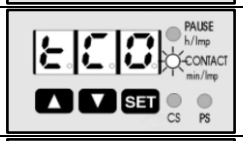
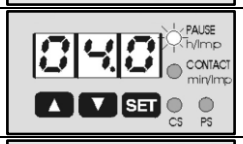
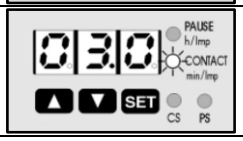
Carry out step 1 to 2.

Default setting upon delivery:

Pause time: 30 min
Lubrication period: 14 min

Note on step 2:

If the works code 000 has been changed already, use the ▲ ▼ keys to select the changed code, and use the SET key to acknowledge.

Step	Key	Display	
1	SET Press longer than 2 seconds		Display flashes 000 (Code 000 is factory setting)
2	SET Press the LED briefly (confirm code)		Automatic display of first parameter "Pause in timer mode" "Pause" LED flashes
3	SET Press briefly		Pause time 1 h (factory setting)
4	▲ ▼		Set new value **Example:** 6.8 h = 6 h 48 min
5	SET Press briefly (Confirm new value)		Display of next parameter "Pump running time in timer mode" "Contact" LED flashes
6	SET Press briefly		Pump running time 4 min (factory setting)
7	▲ ▼		Set new value **Example:** 3 min
8	SET Press briefly	Confirm new value	
9	SET Longer than 2 seconds keys	Changes are written to memory and the display disappears.	

18.6 Troubleshooting

Jam in the system or at a connected lubrication point.

- Unscrew the outlet screw connections from the main distributor to the subdistributor one after the other. If lubricant suddenly exits under pressure when one of the outlet screw connections is loosened, the connected subdistributor is blocked. If lubricant does not exit from any of the outlet screw connections, the main distributor is blocked. Clean the main distributor or replace it.
- Reinstall the outlet screw connections.
- Loosen the outlet screw connections on the blocked subdistributor. If lubricant suddenly exits under pressure when unscrewing one of the outlet screw connections, the connected lubrication point is blocked. If lubricant does not exit from any of the outlet screw connections, the subdistributor is blocked. Clean the blocked subdistributor and replace it if required.
- Remove the blockage at the lubrication point.

Note

For more information on the maintenance of the central lubricating system, please refer to the operating instructions on the central lubricating system (Vogel).

19 Placing in Storage

19.1 At the End of the Harvest Season

Placing the machine in storage at the end of the harvest season is the best possible way to preserve the machine.

- Park the machine in a dry place protected from the elements where no commercial fertilisers are stored.
- Support the machine on blocks so that the entire weight is not resting on the wheels.
- Clean the machine thoroughly through the maintenance openings inside and out. Chaff and dirt attract moisture, which causes steel parts to begin rusting.

Note

If a high pressure washing device is used for cleaning, do not point the water jet at the bearing or electrical system/electronic components.

- Lubricate the machine according to the lubrication chart. Grease the threadings of setting screws and similar items; relieve springs.
- Transport interlock ratchet mechanism for side mowers: grease the bolt.
- Lubricate the plunger rods of all hydraulic cylinders liberally and insert as far as possible.
- Moisten with oil all lever joints, cutter bars, and bearing points that cannot be lubricated.

Write down all repair jobs that must be performed by the next harvest and arrange for them to be done with sufficient lead time. Your KRONE dealer is better able to perform maintenance service and any required repairs outside of harvest season.

19.2 Engine area

Note

For further information, please refer to the engine manufacturer's operating instructions included with delivery (chapter on cleaning and preservation)

19.3 Before the Start of the New Season

Before the start of the new harvest season, conduct a thorough inspection of the machine. Keeping the machine in flawless condition will rule out the possibility of costly malfunctions during harvest time.

If this was not already done after the last harvest, the machine must be thoroughly cleaned inside and out.

- Refit any belts and V-belts that were removed and check belt tensions.
- Remove the covers from the engine openings.
- Lubricate the machine completely according to the lubrication chart.
- Check to make certain all bolts are tightened and all cotter pins are in place.
- Check all seals and the filling quantity of the cooling system. Antifreeze and anticorrosion agent must remain in the cooling system even during summer months, since they protect the system against corrosion.
- Check the batteries. Check the charge state and height of the battery acid. If necessary, charge the batteries.
- Check the tyre pressures.
- Retighten the four attachment bolts on the frame arms to a tightening torque of 640 Nm (annually).
- After these tasks are complete, let the machine run about one hour at half speed. Then check all bearings for overheating.

19.4 Friction clutch -ByPy

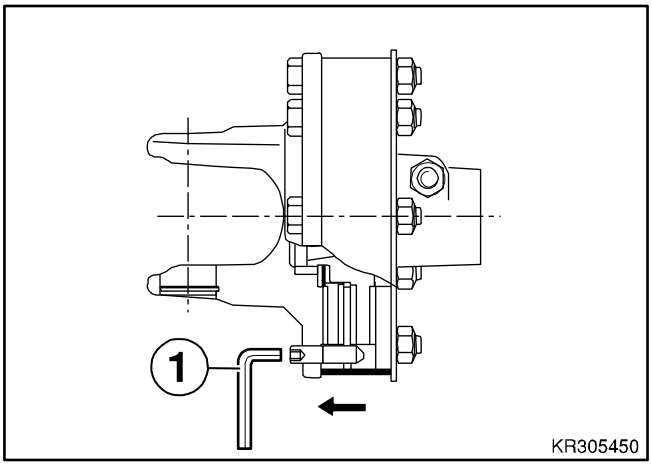


Fig. 352:

Completely loosen the four hexagonal socket head screws (2). These screws are not entirely threaded. Therefore they cannot be screwed out of the coupling.

The coupling is now ready for use.

19.4.1 Venting the Friction Clutch on the PTO Shaft

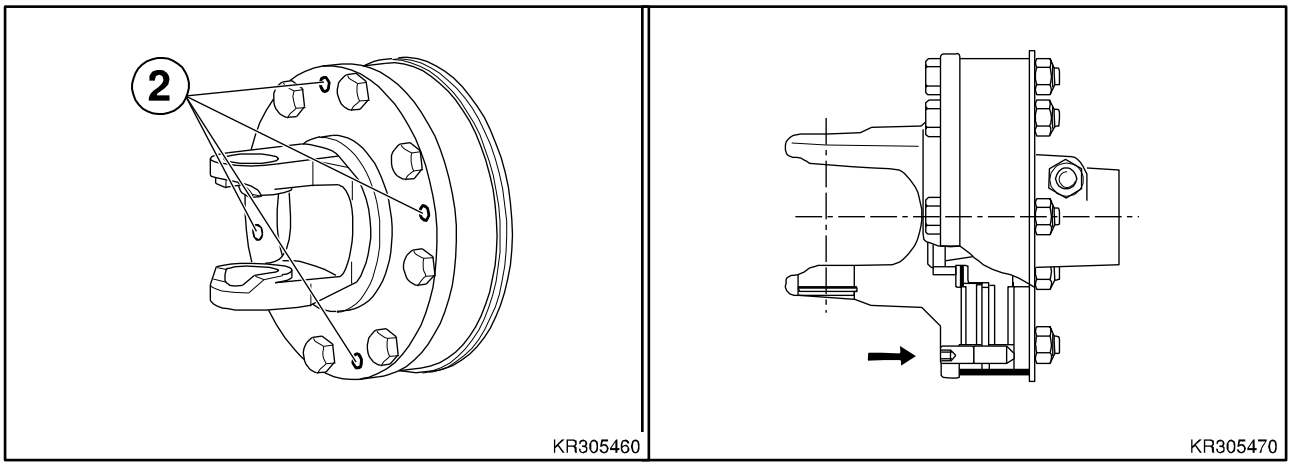


Fig. 353:

Tighten the hexagonal socket head screws (2) on the friction clutch at the beginning of the storage period. This will relieve the disc springs' pressure on the friction lining and prevent the tendency to adhere. The flange coupling is vented.

To place the machine in service again, follow the instructions in chapter "Friction Clutch".

Keine Indexeinträge gefunden.

Error Messages

SmartDrive

N°	Message	Meaning	Possible cause	Check	Remedy	Limp mode
1	SmartDrive overvoltage!	Error: SmartDrive power supply voltage too high	The controller of the dynamo is		Replace the dynamo	
			Dynamo defective		Replace the dynamo	
			Battery change-over relay defective		Replace battery change-over relay	
			Internal SmartDrive error		Replace SmartDrive	
2	SmartDrive undervoltage!	Error: SmartDrive power supply voltage too low	Power supply voltage SmartDrive too slow	LED -22-LD31 not lit	Check fuse -22-F77	
			Power supply voltage central electrical system defective	LED -22-LD63 not lit	Check fuse -22-F63	
				LED -22-LD61 not lit	Check fuse -22-F60	
					Check fuse -22-F792	
			Wiring defective		Check wiring	
			Battery dead		Charge battery, check battery acid, replace battery	
			Dynamo defective		Check the excitation voltage, check wiring, replace the dynamo	
			Charge indicator lamp defective		Check charge indicator lamp, Check wiring	
			Internal SmartDrive error		Replace SmartDrive	

Error Messages

SmartDrive

N°	Message	Meaning	Possible cause	Check	Remedy	Limp mode
3	SmartDrive voltage 12 V sensors	Error: 12 V sensor supply voltage too low	Power supply voltage 12 V sensors too low	LED -22-LD31 not lit	Check fuse -22-F77	
			Power supply voltage central electrical system defective	LED -22-LD63 not lit	Check fuse -22-F63	
				LED -22-LD60 not lit	Check fuse -22-F60	
					Check fuse -22-F92	
			Wiring defective		Check wiring	
			Battery dead		Charge battery, check battery acid, replace battery	
			Short circuit in the wiring to a 12 V sensor		Check wiring to the 12V sensors	
			Short circuit in a 12V sensor		Check 12V sensors and replace if necessary	
			Internal SmartDrive error		Replace SmartDrive	
4	SmartDrive voltage 5V sensors	Error: 5 V sensor supply voltage too low	Power supply voltage 5V sensors too low	LED -22-LD31 not lit	Check fuse -22-F77	
			Central electrical power supply voltage defective	LED -22-LD63 not lit	Check fuse -22-F63	
				LED -22-LD60 not lit	Check fuse -22-F60	
					Check fuse -22-F92	
			Wiring defective		Check wiring	
			Battery dead		Charge battery, check battery acid, replace battery	
			Short circuit in the wiring to a 5V sensor		Check wiring to the 5V sensors	
			Short circuit in a 5V sensor		Check 5 V sensors and replace if necessary	
			Internal SmartDrive error		Replace Smart Drive	

Error Messages

SmartDrive

N°	Message	Meaning	Possible cause	Check	Remedy	Limp mode
16	SmartDrive CS parameters	Error: EEPROM checksum	No update of new parameters performed Incorrect values in EEPROM EEPROM defective Internal SmartDrive error		Load parameter file in SmartDrive Load parameter file in SmartDrive and check parameters Replace SmartDrive Replace SmartDrive	
17	SmartDrive parameter min/max	Error: Min/Max parameters	Incorrect parameter file downloaded Incorrect values in EEPROM EEPROM defective Internal SmartDrive error		Load parameter file in Smart Drive and check parameter file Load parameter file in Smart Drive and check parameters Replace SmartDrive Replace SmartDrive	
18	SmartDrive EEPROM	Error: EEPROM	EEPROM defective Internal SmartDrive error		Replace SmartDrive Replace SmartDrive	
19	SmartDrive digital potentiometer	Error: Digital Pot	Internal SmartDrive error		Replace SmartDrive	
20	SmartDrive EV DAC	Error: EV DAC	Internal SmartDrive error		Replace SmartDrive	
21	SmartDrive I2C error	Error: I2C Bus	Internal SmartDrive error		Replace SmartDrive	

Error Messages

SmartDrive

N°	Message	Meaning	Possible cause	Check	Remedy	Limp mode
30	SmartDrive pump 1 control loop	Error: Control loop drive pump 1 front axle	Short circuit/broken cable in wiring for pump valves		Check wiring to pump valves	
			Valve plug defective		Replace valve plug	
			Coil for solenoid valves defective		Replace coil	
			Solenoid valve defective		Replace the solenoid valve	
			The charge pressure is too low		Check charge pressure and replace supply pressure valve if necessary (30+/- 3 bar)	
			The drive pump 1 is defective		Replace the drive pump 1	
			Internal SmartDrive error		Replace SmartDrive	
31	SmartDrive pump 2 control loop	Error: Control loop drive pump 2 rear axle	Short circuit/broken cable in wiring for pump valves		Check wiring to pump valves	
			Valve plug defective		Replace valve plug	
			Coil for solenoid valves defective		Replace coil	
			Solenoid valve defective		Replace the solenoid valve	
			The charge pressure is too low		Check charge pressure and replace supply pressure valve if necessary (30+/- 3 bar)	
			The drive pump 2 is defective		Replace the drive pump 2	
			Internal SmartDrive error		Replace SmartDrive	

Error Messages

SmartDrive

N°	Message	Meaning	Possible cause	Check	Remedy	Limp mode
32	SmartDrive feedback sensor 1 (B38)	Error: Pivoting angle pump 1 front axle – signal out of range	Calibration of the pivoting angle sensor not correct Short circuit/broken cable in wiring for pivoting angle sensors Sensor plug for pivoting angle defective Pivoting angle sensor defective		Run travelling gear diagnostics Set the sensor pivoting angle. There must be a signal of approx. 2.5 volts present in neutral position Check the wiring to the sensors for the pivoting angle Replace sensor plug Replace and adjust the sensor pivoting angle. There must be a signal of approx. 2.5 volts present in neutral position	
33	SmartDrive feedback sensor 2(B39)	Error: Pivoting angle drive pump 2 rear axle – signal out of range	Calibration of the pivoting angle sensor not correct Short circuit/broken cable in wiring for pivoting angle sensors Sensor plug for pivoting angle defective Pivoting angle sensor defective		Run travelling gear diagnostics Set the sensor pivoting angle. There must be a signal of approx. 2.5 volts present in neutral position Check the wiring to the sensors for the pivoting angle Replace sensor plug Replace and adjust the sensor pivoting angle. There must be a signal of approx. 2.5 volts present in neutral position	

Error Messages

SmartDrive

N°	Message	Meaning	Possible cause	Check	Remedy	Limp mode
34	SmartDrive feedback sensor 1 too high(B38)	Error: Pivoting angle drive pump 1 front axle – pivoting angle changes too rapidly	Contamination in the hydraulic system (e.g. actuator valves) Calibration of the pivoting angle sensor not correct Short circuit/broken cable in wiring for pivoting angle sensors Sensor plug for pivoting angle defective Pivoting angle sensor defective		Run travelling gear diagnostics Remove dirt Set the sensor pivoting angle. There must be a signal of approx. 2.5 volts present in neutral position Check the wiring to the sensors for the pivoting angle Replace sensor plug Replace and adjust the sensor pivoting angle. There must be a signal of approx. 2.5 volts present in neutral position	
35	SmartDrive feedback sensor 2 too high(B39)	Error: Pivoting angle drive pump 2 rear axle – pivoting angle changes too rapidly	Contamination in the hydraulic system (e.g. actuator valves) Calibration of the pivoting angle sensor not correct Short circuit/broken cable in wiring for pivoting angle sensors Sensor plug for pivoting angle defective Pivoting angle sensor defective		Run travelling gear diagnostics Remove dirt Set the sensor pivoting angle. There must be a signal of approx. 2.5 volts present in neutral position Check the wiring to the sensors for the pivoting angle Replace sensor plug Replace and adjust the sensor pivoting angle. There must be a signal of approx. 2.5 volts present in neutral position	

Error Messages

SmartDrive

N°	Message	Meaning	Possible cause	Check	Remedy	Limp mode
36	SmartDrive brake pressure sensor (B22/B40)	Error: Brake pressure sensor	Brake pedal switch not adjusted		Run travelling gear diagnostics Adjust brake pedal switch so that the switching of the brake pedal switch is within a range of 70 – 90 bar brake pressure; observe installation distance!	
			Short circuit/broken cable in wiring for brake pressure sensor/ brake pedal switch		Check the wiring to the sensors for the brake pedal sensor and brake pedal switch	
			Sensor plug for brake pressure sensor, brake pedal switch defective		Replace sensor plug	
			Brake pedal switch defective		Replace and adjust the brake pedal switch in such a way that the switching process of the brake pedal switch takes place at an operating brake pressure range of 70 to 90 bar!	
			Brake pressure sensor defective		Replace the brake pressure sensor	
			Brake pressure defective		Check brake pressure	
			Internal SmartDrive error		Replace SmartDrive	
37	SmartDrive pump speed too slow	Error: Pump speed too low	Engine speed too low		Check engine speed	
			Internal error - KMC1		Replace KMC1	
			Internal SmartDrive error		Replace SmartDrive	
			Internal fault ADM		Replace the ADM	

Error Messages

SmartDrive

N°	Message	Meaning	Possible cause	Check	Remedy	Limp mode
38	SmartDrive brake tank pressure (B25)	Error: Brake tank pressure too low	The brake tank pressure is too low		Start diesel engine so that the accumulator is filled Run travelling gear diagnostics	
			Accumulator charging valve defective		Replace accumulator charging valve	
			Accumulator defective		Replace accumulator	
			Short circuit/broken cable in wiring for brake tank pressure sensor		Check the wiring to the brake tank pressure sensor	
			Sensor plug for brake tank pressure defective		Replace sensor plug	
			Sensor for brake tank pressure defective		Replace brake tank pressure sensor	
			Internal SmartDrive error		Replace SmartDrive	

Error Messages

SmartDrive

N°	Message	Meaning	Possible cause	Check	Remedy	Limp mode
39	SmartDrive CAN error	Error: CAN bus communication			Perform CAN diagnostics	
			Power supply voltage SmartDrive defective	LED -22-LD31 not lit	Check fuse -22-F77	
			Power supply voltage central electrical system defective	LED -22-LD63 not lit	Check fuse -22-F63	
					Check fuse -22-F92	
			Short circuit/broken cable in the wiring for the CAN1 bus		Check wiring	
			CAN1 terminating resistors defective		Check wiring and terminating resistors	
			Power supply voltage Joystick defective			
			Internal joystick error		Replace joystick	
			Power supply voltage KMC1 defective	LED -22-LD61 not lit	Check fuse -22-F61	
				LED -22-LD60 not lit	Check fuse -22-F60	
					Check fuse -22-F92	
			Internal error - KMC1		Replace KMC1	
			Internal SmartDrive error		Replace SmartDrive	
40	SmartDrive high pressure sensor (B7)	Error: High-pressure sensor – signal out of range			Run travelling gear diagnostics	
			Short circuit/broken cable in the wiring for the high pressure sensor		Check wiring to high pressure sensor	
			Sensor plug, high pressure - defective		Replace sensor plug	
			High pressure sensor defective		Replace high-pressure sensor	
			High pressure incorrect		Check high pressure (420 bar)	
			Internal SmartDrive error		Replace SmartDrive	

Error Messages

SmartDrive

N°	Message	Meaning	Possible cause	Check	Remedy	Limp mode
42	SmartDrive parking brake active	Error: Attempt to move against the parking brake	Parking brake switch is actuated		Switch off the parking brake switch	
					Check fuse -22-F72.1	
			Short circuit in the wiring of the switch		Check the wiring to the parking brake switch	
			Parking brake switch defective		Replace parking brake switch	
			Broken cable in the wiring bridge of the parking brake pressure input at the SmartDrive		Check wiring bridge at the parking brake pressure input	
			Internal SmartDrive error		Replace SmartDrive	
43	SmartDrive charge pressure too low	Error: The charge pressure is too low	No engine speed or speed too slow		Start engine or increase speed	
			Hydraulic leakage		Repair the leakage	
			Supply pump defective		Check charge pressure and replace supply pump if necessary (30+/-3 bar)	
			Supply pressure valve defective		Replace the supply pressure valve	
			Short circuit/broken cable in the wiring for the supply pressure sensor		Check wiring to supply pressure sensor	
			Internal SmartDrive error		Replace SmartDrive	

Error Messages

SmartDrive

N°	Message	Meaning	Possible cause	Check	Remedy	Limp mode
44	SmartDrive oil temperature too high (B5)	Error: Oil temperature too high	Hydraulic oil too hot Radiator dirty Short circuit/broken cable in wiring for the temperature sensor flush valve Flush valve temperature sensor defective Internal SmartDrive error		Allow the machine to cool down Clean the radiator Run travelling gear diagnostics Check the wiring for the temperature sensor flush valve Replace the temperature sensor flush valve Replace SmartDrive	
45	Release travelling gear switch not actuated (S3)	Error: Attempt to move without release travelling gear	Release travelling gear switch is not actuated Short circuit/broken cable in the wiring of the switch Release travelling gear switch defective Internal SmartDrive error		Switch on the travelling gear switch Perform operating panel diagnostics Check the wiring to the release travelling gear switch Replace release travelling gear switch Replace SmartDrive	

Error Messages

SmartDrive

N°	Message	Meaning	Possible cause	Check	Remedy	Limp mode
46	SmartDrive pump 1 coil 1 (Y2)	Error: Coil 1 Pump 1	Short circuit/broken cable in wiring for coil Coil defective Internal SmartDrive error		Check wiring to valve Replace coil Replace SmartDrive	
47	SmartDrive pump 1 coil 2 (Y1)	Error: Coil 2 Pump 1	Short circuit/broken cable in wiring for coil Coil defective Internal SmartDrive error		Check wiring to valve Replace coil Replace SmartDrive	
48	SmartDrive pump 2 coil 1 (Y4)	Error: Coil 1 Pump 2	Short circuit/broken cable in wiring for coil Coil defective Internal SmartDrive error		Check wiring to valve Replace coil Replace SmartDrive	
49	SmartDrive pump 2 coil 2 (Y3)	Error: Coil 2 Pump 2	Short circuit/broken cable in wiring for coil Coil defective Internal SmartDrive error		Check wiring to valve Replace coil Replace SmartDrive	
50	SmartDrive joystick error	Error: The driving lever signal incorrect/defective	Power supply voltage Joystick defective Power supply voltage central electrical system defective Driving lever defective Internal SmartDrive error	LED -22-LD31 not lit LED -22-LD63 not lit	Perform joystick diagnostics Check fuse -22-F57 Check fuse -22-F65 Check fuse -22-F77 Check fuse -22-F63 Check fuse -22-F92 Replace driving lever Replace SmartDrive	

Error Messages

SmartDrive

N°	Message	Meaning	Possible cause	Check	Remedy	Limp mode
60	SmartDrive current pump 1 coil 1 (Y2)	Error: Actuator valve 1 drive pump 1 – front axle forward	Short circuit/broken cable in the wiring for actuator valve 1 pump 1 Valve plug defective Coil for solenoid valves defective Internal SmartDrive error		Check wiring to actuator valve 1 for pump 1 Replace valve plug Replace coil Replace SmartDrive	
61	SmartDrive current pump 1 coil 2 (Y1)	Error: Actuator valve 2 drive pump 1 – front axle backward	Short circuit/broken cable in the wiring for actuator valve 2 pump 1 Valve plug defective Coil for solenoid valves defective Internal SmartDrive error		Check wiring to actuator valve 2 for pump 1 Replace valve plug Replace coil Replace SmartDrive	
62	SmartDrive wiring pump 1 coil 3	Error: Stop valve drive pump 1 – front axle	Short circuit/broken cable in the wiring for stop valve pump 1 Valve plug defective Coil for solenoid valve defective Internal SmartDrive error		Check wiring to stop valve for pump 1 Replace valve plug Replace coil Replace SmartDrive	
63	SmartDrive Current pump 2 coil 1 (Y4)	Error: Actuator valve 1 drive pump 2 – rear axle forward	Short circuit/broken cable in the wiring for actuator valve 1 pump 2 Valve plug defective Coil for solenoid valves defective Internal SmartDrive error		Check wiring to actuator valve 1 for pump 2 Replace valve plug Replace coil Replace SmartDrive	

Error Messages

SmartDrive

N°	Message	Meaning	Possible cause	Check	Remedy	Limp mode
64	SmartDrive current pump 2 coil 2 (Y3)	Error: Actuator valve 2 drive pump 2 – rear axle backward	Short circuit/broken cable in the wiring for actuator valve 2 pump 2 Valve plug defective Coil for solenoid valves defective Internal SmartDrive error		Check wiring to actuator valve 2 for pump 2 Replace valve plug Replace coil Replace SmartDrive	
65	SmartDrive wiring pump 2 coil 3 (Y46)	Error: Stop valve drive pump 2 – rear axle	Short circuit/broken cable in the wiring for stop valve pump 2 Valve plug defective Coil for solenoid valve defective Internal SmartDrive error		Check wiring to stop valve for pump 2 Replace valve plug Replace coil Replace SmartDrive	
95	Error: Brake valve	Error: Brake valve	Brake was applied continuously (for example braking pressure greater than 10 bar and longer than 3 min.) Brake valve defective or jammed Brake pressure sensor defective Internal SmartDrive error		Remove foot from the brake Run travelling gear diagnostics Check brake valve Replace the brake pressure sensor Replace SmartDrive	

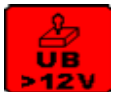
Error Messages

SmartDrive

N°	Message	Meaning	Possible cause	Check	Remedy	Limp mode
96	CAN to SmartDrive	Error: CAN bus communication – SmartDrive to terminal			Perform CAN diagnostics	
			Power supply voltage SmartDrive defective	LED -22-LD31 not lit	Check fuse -22-F77	
			Power supply voltage central electrical system defective	LED -22-LD63 not lit	Check fuse -22-F63	
				LED -22-LD60 not lit	Check fuse -22-F60	
					Check fuse -22-F92	
			Safety output for travelling gear from KMC1 faulty	KMC LD2 not lit	Check the safety output of KMC1 (output is always active with shut-off engine); check wiring	
				LED -22-LD102 not lit		
			Life signal from SmartDrive faulty	LED -22-LD116 not lit	Check the power supply voltage on the SmartDrive; check wiring	
			Short circuit/broken cable in the wiring for the CAN1 bus		Check wiring	
			CAN1 terminating resistors defective		Check wiring and terminating resistors	
			Internal SmartDrive error		Replace SmartDrive	

Error Messages

Joystick

N°	Message	Meaning	Possible cause	Check	Remedy
113	Joystick undervoltage 12V 	Error: 12 Volt power supply voltage too low	Power supply voltage joystick too low		Perform joystick diagnostics Check fuse -22-F57 Check fuse -22-F65
			Power supply voltage central electrical system defective	LED -22-LD63 not lit	Check fuse -22-F63 Check fuse -22-F92
			Wiring defective		Check wiring
			Battery dead		Charge battery, check battery acid, replace battery
			Charge indicator lamp defective		Check charge indicator lamp, Check wiring
			Dynamo defective		Replace the dynamo
			Internal joystick error		Replace joystick
114	Joystick overvoltage 12V 	Error: 12 Volt power supply voltage too high	The controller of the dynamo is defective		Perform joystick diagnostics Replace the dynamo
			Dynamo defective		Replace the dynamo
			Battery change-over relay defective		Replace battery change-over relay
			Internal joystick error		Replace joystick

Error Messages

Joystick

N°	Message	Meaning	Possible cause	Check	Remedy
115	Joystick undervoltage 8 	Error: 8.5 Volt joystick voltage too low	Power supply voltage joystick too low		Perform joystick diagnostics Check fuse -22-F57 Check fuse -22-F65
			Power supply voltage central electrical system defective	LED -22-LD63 not lit	Check fuse -22-F63 Check fuse -22-F92
			Battery dead		Charge battery, check battery acid, replace battery
			Charge indicator lamp defective		Check charge indicator lamp, Check wiring
			Dynamo defective		Replace the dynamo
			Internal joystick error		Replace joystick
116	Joystick button voltage 12V 	Error: 12 Volt Button voltage – voltage out of range	Battery dead		Charge battery, check battery acid, replace battery
			Charge indicator lamp defective		Check charge indicator lamp, Check wiring
			Dynamo defective		Replace the dynamo
			Internal joystick error		Replace joystick

Error Messages

Joystick

N°	Message	Meaning	Possible cause	Check	Remedy
117	Joystick electrical power supply LED	Error: 12 V LED power supply voltage – voltage out of range	Battery dead Charge indicator lamp defective Dynamo defective Internal joystick error		Perform joystick diagnostics Charge battery, check battery acid, replace battery Check charge indicator lamp; Check wiring Replace the dynamo Replace joystick
118	Joystick electrical power supply outputs	Error: Power supply voltage for 12 V outputs – voltage out of range	Battery dead Charge indicator lamp defective Dynamo defective Internal joystick error		Charge battery, check battery acid, replace battery Check charge indicator lamp, Check wiring Replace the dynamo Replace joystick
119	Joystick parameter error	Error: Min/Max parameters	Incorrect values in EEPROM EEPROM defective Internal joystick error		Check parameters Replace joystick Replace joystick
120	Joystick checksum error FLASH	Error: FLASH checksum	Download was interrupted FLASH defective Internal joystick error		Repeat download Replace joystick Replace joystick

Error Messages

Operating panel

N°	Message	Meaning	Possible cause	Check	Remedy
124	CU undervoltage 12V 	Error: 12 Volt power supply voltage too low	Power supply voltage for operating panel too low	LED -16-LD1 not lit	Perform operating panel diagnostics Check fuse -22-F47 Check fuse -22-F48
			Power supply voltage central electrical system defective	LED -22-LD62 not lit LED -22-LD64 not lit	Check fuse -22-F62 Check fuse -22-F64
			Wiring defective		Check wiring
			Battery dead		Charge battery, check battery acid, replace battery
			Charge indicator lamp defective		Check charge indicator lamp, Check wiring
			Dynamo defective		Replace the dynamo
			Internal error, operating panel		Replace operating panel
125	CU overvoltage 12V 	Error: 12 Volt power supply voltage too high	The controller of the dynamo is defective		Perform operating panel diagnostics Replace the dynamo
			Dynamo defective		Replace the dynamo
			Battery change-over relay defective		Replace battery change-over relay
			Internal error, operating panel		Replace operating panel

Error Messages

Operating panel

N°	Message	Meaning	Possible cause	Check	Remedy
126	CU voltage 5V electronics too low 	Error: 5 Volt Electronics voltage too low	Battery dead Charge indicator lamp defective Dynamo defective Internal error, operating panel		Perform operating panel diagnostics Charge battery, check battery acid, replace battery Check charge indicator lamp, Check wiring Replace the dynamo Replace operating panel
127	CU voltage 5V electronics too high	Error: 5 Volt Electronics voltage too high	The controller of the dynamo is defective Dynamo defective Battery change-over relay defective Internal error, operating panel		Perform operating panel diagnostics Replace the dynamo Replace the dynamo Replace battery change-over relay Replace operating panel

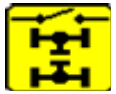
Error Messages

Operating panel

N°	Message	Meaning	Possible cause	Check	Remedy
129	CU voltage 12V LEDs too high	Error: 12 Volt power supply voltage LED too high	The controller of the dynamo is defective Dynamo defective Battery change-over relay defective Internal error, operating panel		Perform operating panel diagnostics Replace the dynamo Replace the dynamo Replace battery change-over relay Replace operating panel
130	CU parameter error	Error: Min/Max parameters	Incorrect values in EEPROM EEPROM defective Internal error, operating panel		Check parameters Replace CU Replace operating panel
131	CU checksum error FLASH	Error: FLASH checksum	Download was interrupted FLASH defective Internal error, operating panel		Repeat download Replace CU Replace operating panel
132	CU keyboard error	Error: Keyboard error (at least one key is pressed continuously)	Keyboard defective Internal error, operating panel		Replace keyboard Replace operating panel

Error Messages

Information Messa

N°	Message	Meaning	Possible cause	Remedy
511	FS Road/Field! 	Wrong switch position for field switch release switch	Wrong switch position Wiring to switch defective Switch defective	Check switch position and correct if necessary Check wiring Replace switch
514	FS_Transmission! 	Wrong switch position for travelling gear release switch	Wrong switch position Wiring to switch defective Switch defective	Check switch position and correct if necessary Check wiring Replace switch
520	FS Axle Separation! 	Wrong switch position for axle separation release switch	Wrong switch position Wiring to switch defective Switch defective	Check switch position and correct if necessary Check wiring Replace switch

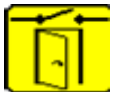
Error Messages

Information Messa

N°	Message	Meaning	Possible cause	Remedy
521	FS All-wheel	Wrong switch position for all-wheel release switch	Wrong switch position Wiring to switch defective Switch defective	Check switch position and correct if necessary Check wiring Replace switch
523	FS Parking brake!	Wrong switch position for parking brake release switch	Wrong switch position Wiring to switch defective Switch defective	Check switch position and correct if necessary Check wiring Replace switch
524	Vehicle moving!	The vehicle is moving and must be at standstill		Stop vehicle
526	Automotive drive active!	Automotive drive active		Switch to field mode (no automotive drive)

Error Messages

Information Messa

N°	Message	Meaning	Possible cause	Remedy
527	Driver NOT_on seat!	No one is on the driver's seat	Driver's seat not in use Wiring to seat switch defective Seat switch defective	Sit on the driver's seat Check wiring Replace seat switch
529	Open door! 	The cabin door is open, but should be closed	Door open Wiring to switch defective Switch defective	Close door Check wiring Replace switch
531	Diesel engine at standstill!	Diesel engine not operating		Starting the diesel engine
532	Diesel engine running!	Diesel engine operating		Stop diesel engine
533	Engine NOT low idle!	Diesel engine not operating on idle		Set engine idle speed
534	Engine NOT at 2000 rpm	Diesel engine not operating at 2000 rpm		Set nominal engine speed

Error Messages

Information Messa

N°	Message	Meaning	Possible cause	Remedy
535	Out of range - set to MIN!	Value entered is less than the minimum permissible value. The minimum permissible value has been set		None
536	Out of range - set to MAX!	Value entered is greater than the maximum permissible value. The maximum permissible value has been set		None
537	Engine revs too high	Engine speed is too high for a certain action. It must be reduced.		Lower engine speed
539	Release ERR-INIT!	An initialize operation was carried out (no significance for driver)		None

Error Messages

DIOM

N°	Message	Meaning	Possible cause	Check	Remedy
16000	DIOM communication	Error: Communication – DIOM to CAN			Perform CAN diagnostics
			Power supply voltage DIOM defective	LED -22-LD59 not lit	Check fuse -22-F59
				LED -22-LD27 not lit	Check fuse -22-F73
			Power supply voltage central electrical system defective	LED -22-LD63 not lit	Check fuse -22-F63
				LED -22-LD60 not lit	Check fuse -22-F60
					Check fuse -22-F92
			Short circuit/broken cable in the wiring for the CAN1 bus		Check wiring
			CAN1 terminating resistors defective		Check wiring and terminating resistors
			Internal error DIOM		Replace DIOM
16001	DIOM temperature	Error: DIOM temperature too high	DIOM has overheated		Allow DIOM to cool down
					Perform DIOM diagnostics
			Internal error DIOM		Replace DIOM

Error Messages

DIOM

N°	Message	Meaning	Possible cause	Check	Remedy
16002	DIOM voltage Internal	Error: Internal voltage in DIOM incorrect	Internal voltage DIOM defective	LED -22-LD59 not lit	Check fuse -22-F59
				LED -22-LD27 not lit	Check fuse -22-F73
			Power supply voltage central electrical system defective	LED -22-LD63 not lit	Check fuse -22-F63
				LED -22-LD60 not lit	Check fuse -22-F60
					Check fuse -22-F92
			Wiring faulty		Check wiring and plug
			Internal error DIOM		Replace DIOM
16003	DIOM voltage UB	Error: DIOM UB voltage incorrect			Run electronics diagnostics
			Power supply voltage DIOM defective	LED -22-LD59 not lit	Check fuse -22-F59
				LED -22-LD27 not lit	Check fuse -22-F73
			Power supply voltage central electrical system defective	LED -22-LD63 not lit	Check fuse -22-F63
				LED -22-LD60 not lit	Check fuse -22-F60
					Check fuse -22-F92
			Wiring faulty		Check wiring and plug
			Internal error DIOM		Replace DIOM

Error Messages

DIOM

N°	Message	Meaning	Possible cause	Check	Remedy
16004	DIOM overall current	Error: DIOM overall current incorrect			Run electronics diagnostics
			DIOM overall current incorrect	LED -22-LD59 not lit	Check fuse -22-F59
				LED -22-LD27 not lit	Check fuse -22-F73
			Power supply voltage central electrical system defective	LED -22-LD63 not lit	Check fuse -22-F63
				LED -22-LD60 not lit	Check fuse -22-F60
					Check fuse -22-F92
			Wiring faulty		Check wiring and plug
			Internal error DIOM		Replace DIOM
16005	Current at the output				
16006	DIOM hardware	Error: DIOM hardware defective	Short circuit/broken cable in the wiring		Check wiring
			Internal error DIOM		Replace DIOM

Error Messages

DIOM

N°	Message	Meaning	Possible cause	Check	Remedy
16007	DIOM voltage UC	Error: DIOM UC voltage incorrect			Run electronics diagnostics
			Power supply voltage DIOM defective	LED -22-LD59 not lit	Check fuse -22-F59
				LED -22-LD27 not lit	Check fuse -22-F73
			Power supply voltage central electrical system defective	LED -22-LD63 not lit	Check fuse -22-F63
				LED -22-LD60 not lit	Check fuse -22-F60
					Check fuse -22-F92
			Wiring faulty		Check wiring and plug
			Internal error DIOM		Replace DIOM
16008	DIOM voltage 7.5V	Error: DIOM 7.5 V voltage incorrect	Power supply voltage DIOM defective	LED -22-LD59 not lit	Check fuse -22-F59
				LED -22-LD27 not lit	Check fuse -22-F73
			Power supply voltage central electrical system defective	LED -22-LD63 not lit	Check fuse -22-F63
				LED -22-LD60 not lit	Check fuse -22-F60
					Check fuse -22-F92
			Wiring faulty		Check wiring and plug
			Internal error DIOM		Replace DIOM
16009	DIOM EEPROM	Error: EPROM defective	EEPROM defective		Replace DIOM
			Internal error DIOM		Replace DIOM

Error Messages

DIOM

N°	Message	Meaning	Possible cause	Check	Remedy
16010	DIOM PWM1 current	Error: Over-current			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace coil
			Solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM
16011	DIOM PWM2 current	Error: Over-current			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace coil
			Solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM
16012	DIOM PWM3 current	Error: Over-current			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM

Error Messages

DIOM

N°	Message	Meaning	Possible cause	Check	Remedy
16013	DIOM PWM4 current	Error: Over-current	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Run electronics diagnostics Check wiring to valve Replace valve plug Replace the solenoid valve Replace DIOM
16014	DIOM DIG1 current	Error: Over-current	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Run electronics diagnostics Check wiring to valve Replace valve plug Replace the solenoid valve Replace DIOM
16015	DIOM DIG2 current	Error: Over-current	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Run electronics diagnostics Check wiring to valve Replace valve plug Replace the solenoid valve Replace DIOM

Error Messages

DIOM

N°	Message	Meaning	Possible cause	Check	Remedy
16016	DIOM DIG3 current	Error: Over-current	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Run electronics diagnostics Check wiring to valve Replace valve plug Replace the solenoid valve Replace DIOM
16017	DIOM DIG4 current	Error: Over-current	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Check wiring to valve Replace valve plug Replace the solenoid valve Replace DIOM
16018	DIOM PWM1 status	Error: Status	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Check wiring to valve Replace valve plug Replace the solenoid valve Replace DIOM
16019	DIOM PWM2 status	Error: Status	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Check wiring to valve Replace valve plug. Replace the solenoid valve Replace DIOM

Error Messages

DIOM

N°	Message	Meaning	Possible cause	Check	Remedy
16020	DIOM PWM3 status	Error: Status	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Check wiring to valve Replace valve plug. Replace the solenoid valve Replace DIOM
16021	DIOM PWM4 status	Error: Status	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Check wiring to valve Replace valve plug Replace the solenoid valve Replace DIOM
16022	DIOM DIG1 status	Error: Status	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Run electronics diagnostics Check wiring to valve Replace valve plug Replace the solenoid valve Replace DIOM

Error Messages

DIOM

N°	Message	Meaning	Possible cause	Check	Remedy
16023	DIOM DIG2 status	Error: Status			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM
16024	DIOM DIG3 status	Error: Status			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM
16025	DIOM DIG4 status	Error: Status			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM

Error Messages

DIOM

N°	Message	Meaning	Possible cause	Check	Remedy
16040	DIOM PWM5 current	Error: Over-current			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace coil
			Solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM
16041	DIOM PWM6 current	Error: Over-current			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace coil
			Solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM

Error Messages

DIOM

N°	Message	Meaning	Possible cause	Check	Remedy
16042	DIOM PWM7 current	Error: Over-current	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Run electronics diagnostics Check wiring to valve Replace valve plug Replace the solenoid valve Replace DIOM
16043	DIOM PWM8 current	Error: Over-current	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Run electronics diagnostics Check wiring to valve Replace valve plug Replace the solenoid valve Replace DIOM
16044	DIOM DIG5 current	Error: Over-current	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Run electronics diagnostics Check wiring to valve Replace valve plug Replace the solenoid valve Replace DIOM

Error Messages

DIOM

N°	Message	Meaning	Possible cause	Check	Remedy
16045	DIOM DIG6 current	Error: Over-current			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM
16046	DIOM DIG7 current	Error: Over-current			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM
16047	DIOM DIG8 current	Error: Over-current	Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM

Error Messages

DIOM

N°	Message	Meaning	Possible cause	Check	Remedy
16048	DIOM PWM5 status	Error: Status	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Check wiring to valve Replace valve plug Replace the solenoid valve Replace DIOM
16049	DIOM PWM6 status	Error: Status	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Check wiring to valve Replace valve plug. Replace the solenoid valve Replace DIOM
16050	DIOM PWM7 status	Error: Status	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Check wiring to valve Replace valve plug. Replace the solenoid valve Replace DIOM
16051	DIOM PWM8 status	Error: Status	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Check wiring to valve Replace valve plug Replace the solenoid valve Replace DIOM

Error Messages

DIOM

N°	Message	Meaning	Possible cause	Check	Remedy
16052	DIOM DIG5 status	Error: Status			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM
16053	DIOM DIG6 status	Error: Status			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM
16054	DIOM DIG7 status	Error: Status			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM

Error Messages

DIOM

N°	Message	Meaning	Possible cause	Check	Remedy
16055	DIOM DIG8 status	Error: Status			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM
16070	DIOM PWM9 current	Error: Over-current			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace coil
			Solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM

Error Messages

DIOM

N°	Message	Meaning	Possible cause	Check	Remedy
16071	DIOM PWM10 current	Error: Over-current			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace coil
			Solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM
16072	DIOM PWM11 current	Error: Over-current			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM
16073	DIOM PWM12 current	Error: Over-current			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM

Error Messages

DIOM

N°	Message	Meaning	Possible cause	Check	Remedy
16074	DIOM DIG9 current	Error: Over-current			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM
16075	DIOM DIG10 current	Error: Over-current			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM
16076	DIOM DIG11 current	Error: Over-current			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM

Error Messages

DIOM

N°	Message	Meaning	Possible cause	Check	Remedy
16077	DIOM DIG12 current	Error: Over-current	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Check wiring to valve Replace valve plug Replace the solenoid valve Replace DIOM
16078	DIOM PWM9 status	Error: Status	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Check wiring to valve Replace valve plug Replace the solenoid valve Replace DIOM
16079	DIOM PWM10 status	Error: Status	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Check wiring to valve Replace valve plug. Replace the solenoid valve Replace DIOM
16080	DIOM PWM11 status	Error: Status	Short circuit/broken cable in the wiring for the valve Valve plug defective Coil for solenoid valve defective Internal error DIOM		Check wiring to valve Replace valve plug. Replace the solenoid valve Replace DIOM

Error Messages

DIOM

N°	Message	Meaning	Possible cause	Check	Remedy
16081	DIOM PWM12 status	Error: Status	Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM
16082	DIOM DIG9 status	Error: Status			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM
16083	DIOM DIG10 status	Error: Status			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM

Error Messages

DIOM

N°	Message	Meaning	Possible cause	Check	Remedy
16084	DIOM DIG11 status	Error: Status			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM
16085	DIOM DIG12 status	Error: Status			Run electronics diagnostics
			Short circuit/broken cable in the wiring for the valve		Check wiring to valve
			Valve plug defective		Replace valve plug
			Coil for solenoid valve defective		Replace the solenoid valve
			Internal error DIOM		Replace DIOM

Error Messages

Display

N°	Message	Meaning	Possible cause	Check	Remedy
5000	Display battery dead	Error: Backup battery voltage	Discharge the backup battery Internal error display		Replace backup battery in display Replace display
5001	KMC1 software – incorrect machine type	Error: Wrong software	Wrong software loaded		Load new software
5002	KMC1 software – incorrect machine type	Error: Incorrect software	Wrong software loaded		Load new software
5003	Maintenance diesel engine	Note: Maintenance work must be performed	The maintenance interval has elapsed		Have maintenance performed at the intended factory, and have the maintenance reminders reset Perform engine diagnostics
5004	Maintenance diesel engine	Note. Maintenance work must be performed	The maintenance interval has elapsed		Have maintenance performed at the intended factory, and have the maintenance reminders reset Perform engine diagnostics
5005	Display fault 5				
5006	Display fault 6				
5007	Display fault 7				
5008	Display fault 8				

5009	Display fault 9				
5010	Display fault 10				

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
1100	KMC1 fault voltage electronics	Error: Electronics voltage – voltage out of range			Run electronics diagnostics
			Power supply voltage KMC1 defective	LED -22-LD61 not lit	Check fuse -22-F61
			Power supply voltage central electrical system defective	LED -22-LD60 not lit	Check fuse -22-F60
					Check fuse -22-F92
				KMC1 LD36 not lit	
			Wiring defective		Check wiring
			Short circuit in the wiring to a 12V sensor		Check wiring
			Charge indicator lamp defective		Check charge indicator lamp, Check wiring
			The controller of the dynamo is defective		Check the excitation voltage; Check wiring
			Dynamo defective		Replace the dynamo
			Battery dead		Charge battery, check battery acid, replace battery
			Battery change-over relay defective		Replace battery change-over relay
			Internal error - KMC1		Replace KMC1

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
1101	KMC1 electrical voltage too low	Error: Electronics voltage too low			Run electronics diagnostics
			Power supply voltage KMC1 too low	LED -22-LD61 not lit	Check fuse -22-F61
			Power supply voltage central electrical system defective	LED -22-LD60 not lit	Check fuse -22-F60
					Check fuse -22-F92
				KMC1 LD36 not lit	
			Wiring defective		Check wiring
			Short circuit in the wiring to a 12 V sensor		Check wiring
			Charge indicator lamp defective		Check the charge indicator lamp, check the wiring
			The controller of the dynamo is defective		Check the excitation voltage; Check wiring
			Dynamo defective		Replace the dynamo
			Battery dead		Charge battery, check battery acid, replace battery
			Battery change-over relay defective		Replace battery change-over relay
			Internal error - KMC1		Replace KMC1

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
1102	KMC1 electrical voltage too high	Error: Electronics voltage too high	Power supply voltage KMC1 too high		Run electronics diagnostics
			Wiring defective		Check wiring
			Short circuit in the wiring to a 12 V sensor		Check wiring
			Charge indicator lamp defective		Check charge indicator lamp, Check wiring
			The controller of the dynamo is defective		Check the excitation voltage, check wiring
			Dynamo defective		Replace the dynamo
			Battery dead		Charge battery, check battery acid, replace battery
			Battery change-over relay defective		Replace battery change-over relay
			Internal error - KMC1		Replace KMC1

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
1103	KMC1 voltage V1 defective!	Error: KMC1 output voltage V1			Run electronics diagnostics
			Output voltage V1 defective	LED -22-LD40 not lit	Check fuse -22-F87
			Power supply voltage central electrical system defective	LED -22-LD60 not lit	Check fuse -22-F60
				LED -22-LD63 not lit	Check fuse -22-F63
					Check fuse -22-F92
				KMC1 LD36 not lit	
			Fuse F13 in KMC1 defective	KMC1 LD37 not lit	Check fuse F13 in KMC1
			Wiring of release switch defective		Check wiring
			Release switch defective		Replace release switch
			GAL component release logic wrong (wrong GAL component)		Check release logic, and replace GAL component, if necessary
			GAL component defective		Replace GAL component
			Charge indicator lamp defective		Check charge indicator lamp, Check wiring
			Dynamo defective		Check the excitation voltage, check the wiring, replace the dynamo
			Battery dead		Charge battery, check battery acid, replace battery
			Internal error - KMC1		Replace KMC1

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
1104	KMC1 voltage V2 defective!	Error: KMC1 Output voltage of V2			Run electronics diagnostics
			Output voltage of V2 defective	LED -22-LD38 not lit	Check fuse -22-F86
			Central electrical power supply voltage defective	LED -22-LD60 not lit	Check fuse -22-F60
				LED -22-LD63 not lit	Check fuse -22-F63
					Check fuse -22-F92
			Fuse F6 in KMC1 defective	KMC1 LD37 not lit	Check fuse F6 in KMC1
			Wiring of release switch defective		Check wiring
			Release switch defective		Replace release switch
			GAL component release logic wrong (wrong GAL component)		Check release logic, and replace GAL component, if necessary
			GAL component defective		Replace GAL component
			Charge indicator lamp defective		Check charge indicator lamp, Check wiring
			Dynamo defective		Check the excitation voltage, check the wiring, replace the dynamo
			Battery dead		Charge battery, check battery acid, replace battery
			Internal error - KMC1		Replace KMC1

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
1105	KMC1 voltage V3 defective!	Error: KMC1 Output voltage V3			Run electronics diagnostics
			Output voltage V3 defective	LED -22-LD37 not lit	Check fuse -22-F85
			Power supply voltage central electrical system defective	LED -22-LD60 not lit	Check fuse -22-F60
				LED -22-LD63 not lit	Check fuse -22-F63
					Check fuse -22-F92
			Fuse F12 in KMC1 defective	KMC1 LD40 not lit	Check fuse F12 in KMC1
			Wiring of release switch defective		Check wiring
			Release switch defective		Replace release switch
			GAL component release logic wrong (wrong GAL component)		Check release logic, and replace GAL component, if necessary
			GAL component defective		Replace GAL component
			Charge indicator lamp defective		Check charge indicator lamp, Check wiring
			Dynamo defective		Check the excitation voltage, check the wiring, replace the dynamo
			Battery dead		Charge battery, check battery acid, replace battery
			Internal error - KMC1		Replace KMC1

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
1106	KMC1 voltage V4 defective!	Error: KMC1 output voltage V4			Run electronics diagnostics
			Output voltage V4 defective	LED -22-LD36 not lit	Check fuse -22-F84
			Power supply voltage central electrical system defective	LED -22-LD60 not lit	Check fuse -22-F60
				LED -22-LD63 not lit	Check fuse -22-F63
					Check fuse -22-F92
			Fuse F2 in KMC1 defective	KMC1 LD41 not lit	Check fuse F2 in KMC1
			Wiring of release switch defective		Check wiring
			Release switch defective		Replace release switch
			GAL component release logic wrong (wrong GAL component)		Check release logic, and replace GAL component, if necessary
			GAL component defective		Replace GAL component
			Charge indicator lamp defective		Check charge indicator lamp, Check wiring
			Dynamo defective		Check the excitation voltage, check the wiring, replace the dynamo
			Battery dead		Charge battery, check battery acid, replace battery
			Internal error - KMC1		Replace KMC1

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
1108	KMC1 voltage 8V dig.sensors	Error: 8 V voltage of digital sensors		KMC1 LD27 not lit	Run electronics diagnostics
			Short circuit in the wiring to a digital sensor		Check wiring
			Digital sensor defective		Check the sensors and replace, if and when necessary
			Charge indicator lamp defective		Check the charge indicator lamp, check the wiring
			Dynamo defective		Check the excitation voltage, check the wiring, replace the dynamo
			Battery dead		Charge battery, check battery acid, replace battery
			Internal error - KMC1		Replace KMC1

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
1109	KMC1 voltage 8V ana.sensors	Error: 8 V voltage of analogue sensors		KMC1 LD28 not lit	Run electronics diagnostics
			Short circuit in the wiring to an analogue sensor		Check wiring
			Analogue sensor defective		Check the sensors and replace, if and when necessary
			Charge indicator lamp defective		Check charge indicator lamp, Check wiring
			Dynamo defective		Check the excitation voltage, check the wiring, replace the dynamo
			Battery dead		Charge battery, check battery acid, replace battery
			Internal error - KMC1		Replace KMC1
1110	KMC1 vlt. batt. 3V too low	Error: Backup battery voltage 3 V too low	Discharge the backup battery		Run electronics diagnostics Replace the backup battery in KMC1
			Internal error - KMC1		Replace KMC1
1200	Sensor B20, position axle suspension	Error: Position sensor axle suspension	Short circuit/broken cable in the wiring		Performing axle suspension diagnostics Check wiring
			Sensor defective		Check sensor and replace, if and when necessary
			Internal error - KMC1		Replace KMC1

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
1203	Sensor B14, position mowing unit right	Error: Mower position sensor right	Short circuit/broken cable in the wiring		Perform work diagnostics Check wiring
			Sensor defective		Check sensor and replace, if and when necessary
			Internal error - KMC1		Replace KMC1
1205	Sensor B15, position mowing unit left	Error: Mower position sensor left	Short circuit/broken cable in the wiring		Perform work diagnostics Check wiring
			Sensor defective		Check sensor and replace, if and when necessary
			Internal error - KMC1		Replace KMC1
1207	Sensor B11, speed mowing unit front	Error: Speed sensor, mower drive front	Short circuit/broken cable in the wiring		Perform work diagnostics Check wiring
			Sensor defective		Check sensor and replace, if and when necessary
			Internal error - KMC1		Replace KMC1

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
1208	Sensor B12, speed mowing unit right	Error: Speed sensor, mower drive right	Short circuit/broken cable in the wiring		Perform work diagnostics Check wiring
			Sensor defective		Check sensor and replace, if and when necessary
			Internal error - KMC1		Replace KMC1
1209	Sensor B13, speed mowing unit left	Error: Speed sensor, mower drive left	Short circuit/broken cable in the wiring		Perform work diagnostics Check wiring
			Sensor defective		Check sensor and replace, if and when necessary
			Internal error - KMC1		Replace KMC1
1212	Sensor B28, speed auger right	Error: Speed sensor, worm gear right	Short circuit/broken cable in the wiring		Perform work diagnostics Check wiring
			Sensor defective		Check sensor and replace, if and when necessary
			Internal error - KMC1		Replace KMC1

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
1213	Sensor B29, speed auger left	Error: Speed sensor, worm gear left			Perform work diagnostics
			Short circuit/broken cable in the wiring		Check wiring
			Sensor defective		Check sensor and replace, if and when necessary
			Internal error - KMC1		Replace KMC1
1300	Sensor B43, inclination mowing unit front	Error: Cutting height sensor front – signal out of range	Hydr. cutting height activated even though there is no hydr. cutting height present		Deactivate hydr. cutting height in display
					Performing cutting height diagnostics
			Short circuit/broken cable in the wiring		Check wiring
			Sensor defective		Check sensor and replace, if and when necessary
			Internal error - KMC1		Replace KMC1

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
1301	Sensor B42, inclination mowing unit right	Error: Cutting height sensor right – signal out of range	Hydr. cutting height activated even though there is no hydr. cutting height present		Deactivate hydr. cutting height in display
					Performing cutting height diagnostics
			Short circuit/broken cable in the wiring		Check wiring
			Sensor defective		Check sensor and replace, if and when necessary
			Internal error - KMC1		Replace KMC1
1302	Sensor B41, inclination mowing unit left	Error: Cutting height sensor left – signal out of range	Hydr. cutting height activated even though there is no hydr. cutting height present		Deactivate hydr. cutting height in display
					Performing cutting height diagnostics
			Short circuit/broken cable in the wiring		Check wiring
			Sensor defective		Check sensor and replace, if and when necessary
			Internal error - KMC1		Replace KMC1

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
1304	Sensor B45, spring compensation pressure right	Error: Pressure sensor for spring compensation – signal out of range	Spring compensation activated even though no hydraulic spring compensation is present		Deactivate spring compensation in the display
					Performing spring compensation pressure diagnostics
			Short circuit/broken cable in the pressure sensor wiring		Check wiring
			Pressure sensor defective		Check the pressure sensor and replace if necessary.
			Internal error - KMC1		Replace KMC1
1305	Sensor B44, spring compensation pressure left	Error: Pressure sensor for spring compensation – signal out of range	Spring compensation activated even though no hydraulic spring compensation is present		Deactivate spring compensation in the display
					Performing spring compensation pressure diagnostics
			Short circuit/broken cable in the pressure sensor wiring		Check wiring
			Pressure sensor defective		Check the pressure sensor and replace if necessary.
			Internal error - KMC1		Replace KMC1
1400	Slip, mowing unit front	Error: Slip, mower drive front			Perform work diagnostics
			Short circuit/broken cable in the wiring for speed sensor		Check wiring
			Speed sensor defective		Check speed sensor and replace, if and when necessary

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
			Distance from sensor to metal		Check distance

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
1401	Slip mowing unit right	Error: Slip, mower drive right	V-belt not tightened		Check the V-belt
					Perform work diagnostics
			Short circuit/broken cable in the wiring for speed sensor		Check wiring
			Speed sensor defective		Check speed sensor and replace, if and when necessary
			Distance from sensor to metal		Check distance
1402	Slip mowing unit left	Error: Slip, mower drive left	V-belt not tightened		Check the V-belt
					Perform work diagnostics
			Short circuit/broken cable in the wiring for speed sensor		Check wiring
			Speed sensor defective		Check speed sensor and replace, if and when necessary
			Distance from sensor to metal		Check distance

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
1405	Slip auger right	Error: Slip, worm drive right	Auger monitoring mode activated even though there is no auger present		Deactivate auger monitoring mode in the display
			V-belt not tightened		Check the V-belt
					Perform work diagnostics
			Short circuit/broken cable in the wiring for speed sensor		Check wiring
			Speed sensor defective		Check speed sensor and replace, if and when necessary
			Distance from sensor to metal		Check distance
1406	Slip auger left	Error: Slip, worm drive left	Auger monitoring mode activated even though there is no auger present		Deactivate auger monitoring mode in the display
			V-belt not tightened		Check the V-belt
					Perform work diagnostics
			Short circuit/broken cable in the wiring for speed sensor		Check wiring
			Speed sensor defective		Check speed sensor and replace, if and when necessary
			Distance from sensor to metal		Check distance
1408	Leave position mowing unit right	Error - Mower position sensor right – mower not in work or ready position	Mower has gone out of the "Mow/ready" setting		
			Setting for sensor or metal link		Check distance
			Position sensor defective		Check position sensor and replace if necessary

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
			Short circuit/broken cable in the wiring for position sensor		Check wiring
1409	Leave position mowing unit left	Error - Mower position sensor left – mower not in work or ready position	Mower has gone out of the "Mow/ready" setting		
			Setting for sensor or metal link		Check distance
			Position sensor defective		Check position sensor and replace if necessary
			Short circuit/broken cable in the wiring for position sensor		Check wiring
1504	KMC1 parameters min/max	Error: Min/Max parameters	Incorrect values in EEPROM.		Check parameters
			EEPROM defective		Replace KMC1
			Internal error - KMC1		Replace KMC1

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
1505	Smart Drive safety signal is missing	Error: Safety signal – Smart Drive to KMC1			Run travelling gear diagnostics
			Power supply voltage SmartDrive defective	LED -22-LD31 not lit	Check fuse -22-F77
				LED -22-LD60 not lit	Check fuse -22-F60
				LED -22-LD63 not lit	Check fuse -22-F63
					Check fuse -22-F92
			Short circuit/broken cable in the wiring of the safety signal	KMC1 LD2 not lit	Check wiring
				LED -22-LD 116 flashes	
			Internal error - Smart Drive		Replace Smart Drive
			Internal error - KMC1		Replace KMC1
1506	Tank sensor B34 defective	Error: Filling level fuel tank sensor	Error in the wiring of the filling level fuel tank sensor		Check wiring to filling level fuel tank sensor
			Protective resistor defective		Check the protective resistor and replace it if necessary
			Filling level fuel tank sensor defective		Check filling level fuel tank sensor, and replace if necessary
			Short circuit in the wiring to another KMC1 sensor		Check wiring
			Internal error - KMC1		Replace KMC1
1507	Maintenance diesel engine	Note: Maintenance work must be performed	The maintenance interval has elapsed		Have maintenance performed at the intended factory, and have the maintenance reminders reset
					Perform engine diagnostics

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
1508	Air filter contamination	Error: Air filter contamination	Air filter dirty	CU LD11 lit	Clean air filter and replace if necessary
			Short circuit/broken cable in wiring for air filter contamination sensor		Check wiring to air filter contamination sensor
			Air filter contamination sensor defective		Replace air filter contamination sensor
			Internal error - KMC1		Replace KMC1
1509	Hydraulic oil filling level	Error: Hydraulic tank filling level	The hydraulic oil level is too low		Check hydraulics level and refill hydraulic fluid if necessary
					Perform work diagnostics
			Short circuit/broken cable in the wiring for the hydraulic oil level sensor	CU LD13 lit	Check wiring
			Hydraulic oil level sensor defective		Check the hydraulic tank filling level sensor and replace if necessary
			Power supply voltage for analogue sensors incorrect		Check power supply voltage
			Short circuit in the wiring to another KMC1 sensor		Check wiring
			Internal error - KMC1		Replace KMC1

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
1510	Error suction return air filter 1	Error: Suction return air filter 1 filling level	Suction return air filter 1 dirty		Clean suction return air filter 1 and replace if necessary Perform work diagnostics
			Short circuit/broken cable in the wiring for the suction return air filter 1 sensor	CU LD12 lit	Check wiring
			Suction return air filter 1 sensor		Replace suction return air filter 1 sensor
			Internal error - KMC1		Replace KMC1
1511	Central lubrication system, malfunction	Error: Central lubrication IMPORTANT: All malfunction messages from the central lubrication system must be confirmed and deleted using the DK key on the central lubrication system. This will simultaneously delete any intermediate lubrication. Before deleting the error message, determine the cause of the error, and eliminate it. See also Central Lubrication System in the operating instructions.	Power supply voltage for central lubrication defective	LED -22-LD42 not lit	Check fuse -22-F89
			No grease present	CU LD14 lit	Add grease as described in the BiG M operating instructions, chapter Maintenance central Lubrication System. See also Central Lubrication System in the operating instructions Perform work diagnostics
			Jam in the system or at a connected lubrication point		Check main distributor, subdistributor, and lubrication points for blockages, clean, and replace if necessary See also Central Lubrication System in the operating instructions

Error Messages

KMC1

N°	Message	Meaning	Possible cause	Check	Remedy
1600	CAN to KMC1 	Error: CAN bus communication - KMC1 to terminal			Perform CAN diagnostics
			Power supply voltage KMC1 defective	LED -22-LD60 not lit	Check fuse -22-F60
				LED -22-LD61 not lit	Check fuse -22-F61
					Check fuse -22-F92
			Power supply voltage central electrical system defective		
			Short circuit/broken cable in the wiring for the CAN1 bus		Check wiring
			CAN1 terminating resistors defective		Check wiring and terminating resistors
			Internal error - KMC1		Replace KMC1

Error Messages

CAN

N°	Message	Meaning	Possible cause	Check	Remedy
9900	CAN to KrNET Adr. 0				
9901	CAN to KrNET Adr.1				
9903	CAN to KrNET Adr. 3				
9904	CAN to KrNET Adr. 4				
9907	CAN to KrNET Adr. 7				
9908	CAN to KrNET Adr. 8				
9909	CAN to KrNET Adr. 9				
9910	CAN to KrNET Adr. 10				
9912	CAN to KrNET Adr. 12				

Error Messages

CAN

N°	Message	Meaning	Possible cause	Check	Remedy
9914	CAN to terminal	Error: CAN bus communication - CAN to terminal	Power supply voltage Terminal defective		Perform CAN diagnostics Check fuse -22-F46.1 Check fuse -22-F46
			Power supply voltage central electrical system defective	LED -22-LD63 not lit	Check fuse -22-F63 Check fuse -22-F92
			Short circuit/broken cable in the wiring for the CAN1 bus		Check wiring
			CAN1 terminating resistors defective		Check wiring and terminating resistors
			Short circuit/broken cable in the wiring for the CAN2 bus		Check wiring
			CAN2 terminating resistors defective		Check wiring and terminating resistors
			Internal error terminal		Replace terminal
9915	CAN to KrNET Adr. 15				
9920	CAN to joystick	Error: CAN bus communication - joystick to terminal	Power supply voltage joystick defective		Perform CAN diagnostics Check fuse -22-F57 Check fuse -22-F65
			Power supply voltage central electrical system defective	LED -22-LD63 not lit	Check fuse -22-F63 Check fuse -22-F92
			Short circuit/broken cable in the wiring for the CAN1 bus		Check wiring
			CAN1 terminating resistors defective		Check wiring and terminating resistors
			Internal joystick error		Replace joystick

Error Messages

CAN

N°	Message	Meaning	Possible cause	Check	Remedy
9921	CAN to CU	Error: CAN bus communication - CU to terminal			Perform CAN diagnostics
			Power supply voltage Operating console defective	LED -16-LD1 not lit	Check fuse -22-F47
					Check fuse -22-F48
			Power supply voltage central electrical system defective	LED -22-LD63 not lit	Check fuse -22-F63
					Check fuse -22-F92
			Short circuit/broken cable in the wiring for the CAN1 bus		Check wiring
			CAN1 terminating resistors defective		Check wiring and terminating resistors
			Internal error, operating panel		Replace operating panel

Error Messages

CAN

N°	Message	Meaning	Possible cause	Check	Remedy
9925	CAN to DIOM	Error: CAN bus communication - DIOM to terminal			Perform CAN diagnostics
			Power supply voltage DIOM defective	LED -22-LD59 not lit	Check fuse -22-F59
				LED -22-LD27 not lit	Check fuse -22-F73
			Power supply voltage central electrical system defective	LED -22-LD63 not lit	Check fuse -22-F63
					Check fuse -22-F92
			Short circuit/broken cable in the wiring for the CAN1 bus		Check wiring
			CAN1 terminating resistors defective		Check wiring and terminating resistors
			Internal error DIOM		Replace DIOM
9926	CAN to ADM1	Error: CAN bus communication - DM1 to terminal			Perform CAN diagnostics
			Power supply voltage ADM 1 defective	LED -22-LD17 not lit	Check fuse -22-F68
					Check fuse -22-F70
			Power supply voltage central electrical system defective	LED -22-LD64 not lit	Check fuse -22-F64
				LED -22-LD63 not lit	Check fuse -22-F63
					Check fuse -22-F92
			Short circuit/broken cable in the wiring for the CAN2 bus		Check wiring
			CAN2 terminating resistors defective		Check wiring and terminating resistors
			Internal error ADM1		Replace ADM1

Error Messages

CAN

N°	Message	Meaning	Possible cause	Check	Remedy
9940	Hardware restart KrNET adr. 0				
9941	Hardware restart KrNET adr. 1				
9942	Restart of SmartDrive hardware	Error: Restart hardware SmartDrive	Power supply voltage SmartDrive defective	LED -22-LD31 not lit	Check fuse -22-F77
				LED -22-LD60 not lit	Check fuse -22-F60
				LED -22-LD63 not lit	Check fuse -22-F63
					Check fuse -22-F92
			Power supply voltage central electrical system defective	LED -22-LD63 not lit	Check fuse -22-F63
					Check fuse -22-F92
			Wiring faulty		Check wiring and plug
			Safety output for travelling gear from KMC1 faulty		Check the safety output of KMC1 (output is always active with engine shut off) and check wiring
			Life signal from SmartDrive faulty	LED -22-LD116 not flashing	Check the power supply voltage on the SmartDrive
			Internal SmartDrive error		Replace SmartDrive
9943	Hardware restart KrNET adr. 3				
9944	Hardware restart KrNET adr. 4				

Error Messages

CAN

N°	Message	Meaning	Possible cause	Check	Remedy
9947	Hardware restart KrNET adr. 7				
9948	Hardware restart KrNET adr. 8				
9949	Hardware restart KrNET adr. 9				
9950	Hardware restart KrNET adr. 10				
9952	Hardware restart KrNET adr. 12				

Error Messages

CAN

N°	Message	Meaning	Possible cause	Check	Remedy
9953	Restart KMC1 hardware	Error: Restart KMC1 hardware	Power supply voltage KMC1 defective	LED -22-LD61 not lit	Check fuse -22-F61
			Power supply voltage central electrical system defective	LED -22-LD63 not lit	Check fuse -22-F63
					Check fuse -22-F92
			Wiring faulty		Check wiring and plug
			Internal error - KMC1		Replace KMC1
9954	Restart hardware terminal	Error: Restart terminal hardware	Power supply voltage Terminal defective		Check fuse -22-F46.1
					Check fuse -22-F46
			Power supply voltage central electrical system defective	LED -22-LD63 not lit	Check fuse -22-F63
					Check fuse -22-F92
			Wiring faulty		Check wiring and plug
			Internal error terminal		Replace terminal
9955	Hardware restart KrNET adr. 15				
9960	Restart joystick hardware	Error: Restart joystick hardware	Power supply voltage Joystick defective		Check fuse -22-F57
					Check fuse -22-F65
			Power supply voltage central electrical system defective	LED -22-LD63 not lit	Check fuse -22-F63
					Check fuse -22-F92
			Wiring faulty		Check wiring and plug
			Internal joystick error		Replace joystick

Error Messages

CAN

N°	Message	Meaning	Possible cause	Check	Remedy
9961	Restart CU hardware	Error: Restart CU hardware	Power supply voltage CU defective	LED -16-LD1 not lit	Check fuse -22-F47 Check fuse -22-F48
			Power supply voltage central electrical system defective	LED -22-LD62 not lit LED -22-LD64 not lit	Check fuse -22-F62 Check fuse -22-F64
			Wiring faulty		Check wiring and plug
			Internal error, operating panel		Replace operating panel
9965	Restart DIOM hardware	Error: Restart DIOM hardware	Power supply voltage DIOM defective	LED -22-LD59 not lit LED -22-LD27 not lit	Check fuse -22-F59 Check fuse -22-F73
			Power supply voltage central electrical system defective	LED -22-LD63 not lit LED -22-LD60 not lit	Check fuse -22-F63 Check fuse -22-F60 Check fuse -22-F92
			Wiring faulty		Check wiring and plug
			Internal error DIOM		Replace DIOM
9966	Restart ADM1 hardware	Error: Restart ADM1 hardware	Power supply voltage ADM1 defective	LED -22-LD17 not lit	Check fuse -22-F68 Check fuse -22-F70
			Power supply voltage central electrical system defective	LED -22-LD64 not lit LED -22-LD63 not lit	Check fuse -22-F64 Check fuse -22-F63 Check fuse -22-F92
			Wiring faulty		Check wiring and plug
			Internal error ADM1		Replace ADM1

Error Messages

CAN

N°	Message	Meaning	Possible cause	Check	Remedy
9980	Restart CAN to KrNET adr. 0				
9981	Restart CAN to KrNET adr. 1				
9982	Restart CAN to SmartDrive	Error: Interruption in CAN communication to SmartDrive	Short circuit/broken cable in the wiring for the CAN1 bus CAN1 terminating resistors defective Internal SmartDrive error		Check wiring Check wiring and terminating resistors Replace SmartDrive
9983	Restart CAN to KrNET adr. 3				

Error Messages

CAN

N°	Message	Meaning	Possible cause	Check	Remedy
9984	Restart CAN to KrNET adr. 4				
9987	Restart CAN to KrNET adr. 7				
9988	Restart CAN to KrNET adr. 8				
9989	Restart CAN to KrNET adr. 9				
9990	Restart CAN to KrNET adr. 10				
9992	Restart CAN to KrNET adr. 12				
9993	Restart CAN to KMC1	Error: Interruption in CAN communication to KMC1	Short circuit/broken cable in the wiring for the CAN1 bus CAN1 terminating resistors defective Internal error - KMC1		Check wiring Check wiring and terminating resistors Replace KMC1
9994	Restart CAN to terminal	Error: Interruption in CAN communication to terminal	Short circuit/broken cable in the wiring for the CAN1 bus Short circuit/broken cable in the wiring for the CAN2 bus CAN1 terminating resistors defective CAN2 terminating resistors defective Internal error terminal		Check wiring Check wiring Check wiring and terminating resistors Check wiring and terminating resistors Replace terminal

Error Messages

CAN

N°	Message	Meaning	Possible cause	Check	Remedy
9995	Restart CAN to KrNET adr. 15				
15000	Restart CAN to joystick	Error: Interruption in CAN communication to joystick	Short circuit/broken cable in the wiring for the CAN1 bus CAN1 terminating resistors defective Internal joystick error		Check wiring Check wiring and terminating resistors Replace joystick
15001	Restart CAN to CU	Error: Interruption in CAN communication to CU	Short circuit/broken cable in the wiring for the CAN1 bus CAN1 terminating resistors defective Internal error, operating panel		Check wiring Check wiring and terminating resistors Replace operating panel
15005	Restart CAN to DIOM	Error: Interruption in CAN communication to DIOM	Short circuit/broken cable in the wiring for the CAN1 bus CAN1 terminating resistors defective Internal error DIOM		Check wiring Check wiring and terminating resistors Replace DIOM
15006	Restart CAN to ADM1	Error: Interruption in CAN communication to ADM1	Short circuit/broken cable in the wiring for the CAN2 bus CAN2 terminating resistors defective Internal error ADM1		Check wiring Check wiring and terminating resistors Replace ADM1